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An analysis of the Marine Corps enlistement bonus program

Ramsey, Billy H.

Monterey, California. Naval Postgraduate School

NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

AN ANALYSIS OF THE MARINE CORPS ENLISTMENT BONUS PROGRAM

by

Billy H. Ramsey

March 2008

Thesis Co-Advisors: Samuel E. Buttrey
Bill Hatch

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13. ABSTRACT

The Marine Corps has been very successful at meeting its yearly recruiting goal. However, the Marine Corps does struggle to recruit the correct number of applicants into each enlistment program. Enlistment bonuses are used to attract highly qualified applicants into critically short enlistment programs and the enlistment bonus budget has increased significantly in the past 3 years. The Marine Corps has the ability to determine what enlistment programs are considered "difficult to fill" and the capability to increase the number of allocations and the dollar amount of enlistment bonuses. However, the Marine Corps does not have the ability to determine the optimal dollar amount for an enlistment bonus. This research begins by analyzing methods used in previous studies to estimate the optimal enlistment incentive. This research found that choice-based surveys administered to recruits could be used to determine optimal enlistment incentives. Then the study analyzed eight years of recruiting data obtained from the Total Force Data Warehouse and the Marine Corps Recruiting Command. Results show that the enlistment bonus program (EBP) was unchanged for several years and other factors identified could be decreasing the effectiveness of the EBP. With the information provided by this thesis, the Marine Corps can increase the effectiveness of the EBP.

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AN ANALYSIS OF THE MARINE CORPS ENLISTMENT BONUS PROGRAM

Billy H. Ramsey
Captain, United States Marine Corps
B.A., Concordia University, 1999

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requirements for the degree of

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March 2008

Author: Billy H. Ramsey

Approved by: Samuel E. Buttrey
Thesis Co-Advisor

Bill Hatch
Thesis Co-Advisor

Robert N. Beck
Dean, Graduate School of Business and Public Policy

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ABSTRACT

The Marine Corps has been very successful at meeting its yearly recruiting goal. However, the Marine Corps does struggle to recruit the correct number of applicants into each enlistment program. Enlistment bonuses are used to attract highly qualified applicants into critically short enlistment programs and the enlistment bonus budget has increased significantly in the past 3 years. The Marine Corps has the ability to determine what enlistment programs are considered “difficult to fill” and the capability to increase the number of allocations and the dollar amount of enlistment bonuses. However, the Marine Corps does not have the ability to determine the optimal dollar amount for an enlistment bonus. This research begins by analyzing methods used in previous studies to estimate the optimal enlistment incentive. The research found that choice-based surveys administered to recruits could be used to determine optimal enlistment incentives. Then the study analyzed eight years of recruiting data obtained from the Total Force Data Warehouse and the Marine Corps Recruiting Command. Results show that the enlistment bonus program (EBP) was unchanged for several years and other factors identified could be decreasing the effectiveness of the EBP. With the information provided by this thesis, the Marine Corps can increase the effectiveness of the EBP.

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This thesis would not have been possible without the support from my wife and children. My wife stated on numerous occasions that she enjoyed having me home, but I never truly seemed to be home. If I was not working on my thesis, I was thinking about it. Despite being pregnant, my wife remained supportive and provided assistance on numerous occasions.

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I. INTRODUCTION

This research analyzed the Marine Corps enlistment bonus program. The objective is to determine how the Marine Corps can optimally predict the amount to allocate for enlistment bonuses. The Marine Corps uses enlistment bonuses to attract highly qualified applicants into enlistment programs for critically short military occupational skills.[1]

A. BACKGROUND

Manpower and Reserve Affairs (M&RA) is the largest department within Head Quarters Marine Corps (HQMC). "This organization "assists the Commandant by planning, directing, coordinating, and supervising both active and reserve forces."[2] M&RA in the Marine Corps could be compared to a human resource department within a major corporation. M&RA consists of seven branches as shown in the organizational structure in Figure 1.

Enlisted Manpower Plans section, in response to a significant increase in the enlistment bonus budget, requested that the Naval Postgraduate School analyze the Marine Corps enlistment bonus program to ensure that the section was maximizing the effectiveness of the program.

1 Marine Corps Order 1130.53P dated 11 June 2002.

2 Manpower and Reserve Affairs website, https://www.manpower.usmc.mil, (Accessed on 10 October 2007).

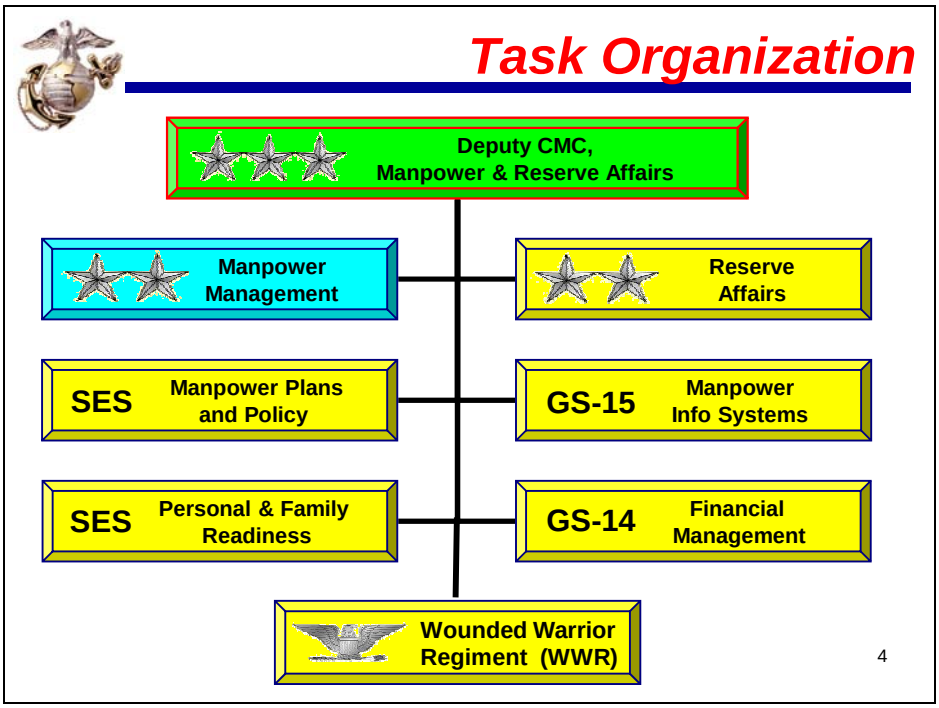

Figure 1. Manpower & Reserve Affairs Task organization

(Source: From HQMC, M&RA, MMOA, Road Show Brief, 2007)

The Manpower Plans and Policy Division (MP) is one of the major branches within M&RA. The MP Division "is responsible for formulating Marine Corps force manpower and mobilization plans."[3] The MP Division is also responsible for "determining total manpower needs and preparing plans, policies, programs, and instructions on manpower matters to implement the Commandants policies and decisions."[4] Figure 2 shows the organizational structure of the MP Division.

[3] Manpower and Reserve Affairs website, https://www.manpower.usmc.mil, (Accessed on 1 January 2008).

[4] Manpower and Reserve Affairs website, https://www.manpower.usmc.mil, (Accessed on 1 January 2008).

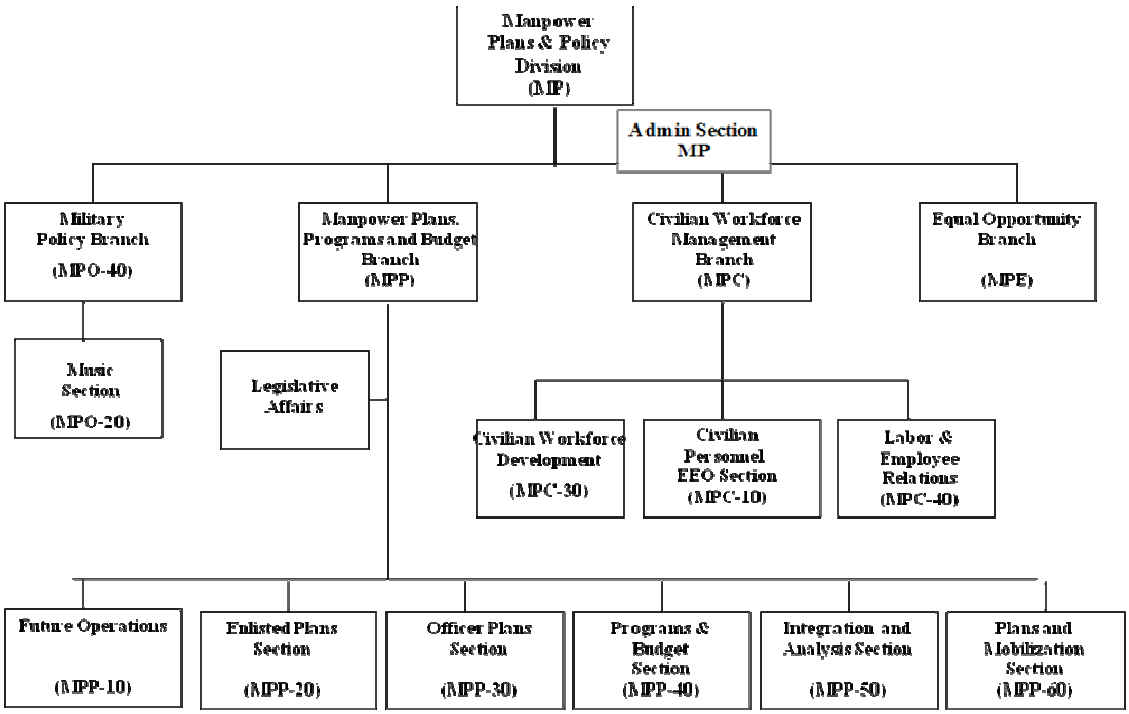

Figure 2. MP Task Organization

(Source: From HQMC, M&RA, MP Div Organization Chart Brief, 2006)

Manpower Plans Programs and Budget Branch (MPP) resides in MP Division. MPP implements plans and policies that manage key areas such as end strength, promotions, accessions and retention. In FY 2007, the Marine Corps end strength was 184,000 and the MPP Branch is currently implementing plans and policies to reach the Commandant's desired end strength of 202,000 by FY 2011. MPP is responsible for "assisting the Director of MP Division in implementing the Commandant's policies and decisions by formulating manpower plans for both officer and the active duty enlisted force."[5] MPP Branch is broken down further

[5] Manpower and Reserve Affairs website, https://www.manpower.usmc.mil, (Accessed on 1 January 2008).

into six sections as shown in Figure 2. One of the sections in MPP Branch is the Enlisted Plans Section (MPP-20).

MPP-20 is a key player in managing the enlisted force. MPP-20 is responsible for "assisting the director of MP Division in implementing the Commandant policies and decisions by formulating Manpower plans for the active duty enlisted force."[6] In FY 2007, enlisted end strength was 166,783 active duty Marines but it will increase to more than 180,000 active duty Marines by FY 2011. MPP-20 implements policies and plans to ensure the successful shaping of the enlisted force into the 233 primary Military Occupational Specialties (MOS). MPP-20 manages the career force and first-term inventory by implementing plans and policies that control retention, promotion and accessions for each MOS. Retention and promotion are critical aspects in managing the enlisted force, but this research will focus on using monetary incentives to assist managing accessions.

Each year MPP-20 determines the number of applicants the Marine Corps needs to recruit into each MOS. After MPP-20's recommendation is approved, the accession mission is assigned to the Marine Corps Recruiting Command (MCRC). In addition, MPP-20 evaluates the Marine Corps' monetary incentives and recommends changes to assist MCRC in meeting its recruiting goal. The Marine Corps has three types of monetary incentive programs: the college fund, enlistment bonuses, and shipping bonuses, as shown in Table 1.

[6] Manpower and Reserve Affairs website, https://www.manpower.usmc.mil, (Accessed on 1 January 2008).

Table 1. Marine Corps Monetary Incentive Programs

Current Monetary Incentive Programs		
Program	**Term (years)**	**Monetary Value**
Enlistment Bonus Program (Specific job Skill)	2-6	$3,000-$15,000
Marine Corps College Fund (Any job skill)	4-6	$50,000+
Shipping Bonus (Any job skill)	4-6	$5,000

(Source: HQMC, M&RA, Enlisted Plans Section)

The Marine Corps has been very successful at meeting its yearly recruiting goal. However, Marine Corps Recruiting data has not been available since the inception of the All-Volunteer Force. An official at MCRC stated that the Marine Corps has met its recruiting goal every year for the past ten years.[7] Meeting the recruiting goal means that if MCRC was tasked to recruit 32,000 applicants in FY 2005, then MCRC recruited a total of 32,000 or more applicants.

B. PROBLEM

The nature of the problem lies in recruiting the correct number of applicants into each enlistment program and shipping the applicants to recruit training at a specified time. In FY 2002, MCRC made its annual recruiting goal, but the Marine Corps was short, for example, 321 applicants designated to the transportation program and 527 applicants designated to the supply and accounting program.[8] MCRC does recruit some recruits with “open contracts” who can be assigned to critically short MOSs, but recruits with

[7] Phone Interview with Mike Styka, MCRC Deputy Head Enlisted Recruiting, 29 November 2007.

[8] MCRC end of the year recruiting report.

open contracts often fall short of being fully qualified and may not meet the shipping time-line to be assigned to a critically short enlistment program. Failing to recruit the correct number of applicants into each MOS makes it difficult to ensure the successful shaping of the enlisted force to meet MOS requirements of fleet units. Even though MPP-20 determines the requirement for each MOS, certain MOSs are critically short due to their high prerequisites or perceived undesirability. In order to entice high-quality applicants to select critically short enlistment programs, the Marine Corps provides enlistment bonuses.

MPP-20 has the ability to determine what enlistment programs are considered “difficult to fill.” The enlistment bonus budget has increased significantly over the last 3 years as shown in Table 2. MPP-20 has the capability to increase the number of allocations and the dollar amount of enlistment bonuses.

Table 2. Marine Corps FY 2006-2008 EBP Budget

Fiscal Year	**Budget in millions**
FY06	6.257
FY07	47[a]
FY08	81

[a] Initial budget was 10.6, increased to 47 in January 2007.

(Source: HQMC, M&RA, Enlisted Plans Section)

However, MPP-20 does not have the ability to determine the optimal dollar amount for an enlistment bonus. What bonus incentive will level the playing field between a popular enlistment program and an unpopular one? In order for the Marine Corps to maximize the effectiveness of enlistment

programs, it needs a means to predict which monetary incentives will be the most effective. In addition, enlistment bonuses require applicants to meet minimum requirements that may be higher than the minimum requirements for the enlistment program. As a result applicants who are qualified for a hard-to-fill enlistment program, but not qualified for an enlistment bonus, have no incentive to select a hard-to-fill enlistment program. As the Marine Corps increases end strength, a key factor in successfully shaping the enlisted force will be recruiting the optimal mix of applicants into the 233 MOSs.

C. PURPOSE

The purpose of this research is to provide MPP-20 alternatives for increasing the effectiveness of the enlistment bonus program. This research identifies and recommends tools that can be used to determine the optimal incentive amount for enlistment bonuses. Additionally, this research identifies factors that are significant to the Marine Corps ability to man hard-to-fill enlistment programs. The results are relevant to MPP-20 and can assist them in effectively allocating monetary incentives to attract high quality applicants into critical enlistment programs.

D. RESEARCH QUESTIONS

1. Primary Research Question

How can MPP-20 effectively predict the optimal dollar amount for enlistment bonuses?

2. Secondary Research Questions

a. What factors could be decreasing the effectiveness of the enlistment bonus program?

b. Can the Marine Corps Total Force Data Warehouse be used to effectively predict the incentives for enlistment bonuses?

c. Do minimum AFQT requirements for enlistment bonus programs decrease the effectiveness of the program?

E. SCOPE AND LIMITATIONS

The scope includes: (1) a review of the Marine Corps enlistment bonus program order; (2) an in-depth review of the literature on prior enlistment programs assigned an enlistment bonus; and (3) an evaluation of the Marine Corps Recruiting data contained within the Total Force Data Warehouse (TFDW). The thesis concludes with recommendations for incorporating alternatives to assist MPP-20 in effectively allocating enlistment incentives to attract high quality applicants into critical enlistment programs.

The methodology for this research is qualitative. The research also utilizes recruiting data from the TFDW and from MCRC. The data in the research focuses on the active duty enlisted applicants that have shipped to recruit training over the past eight years.

F. ORGANIZATION OF THE STUDY

This research is organized into five separate chapters. Chapter I gives an introduction and background on the research issue. Chapter II provides information on the enlistment bonus programs used in the past and the

enlistment bonus programs currently being used. Chapter III reviews prior studies on enlistment bonus programs. Chapter IV describes the data and variables used in study. Chapter V is a summary, and gives conclusions and recommendations.

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II. MARINE CORPS ENLISTMENT BONUS PROGRAM

The United States Marine Corps enlistment bonus program (EBP) has two primary objectives:

1. Attract highly qualified applicants to select designated enlistment programs;[9] and

2. Encourage applicants to ship to recruit training during certain times of the year.

The EBP serves as a vital tool in shaping the structure of the enlisted force. The theory is that offering a monetary incentive is the most cost-effective means to fill enlistment programs that otherwise would not be filled. While generating new enlistments is not an objective of the EBP, previous studies have shown that the EBP has been responsible for generating new enlistments. (Palomba, 1983)

A. ORDERS AND INSTRUCTIONS GOVERNING THE ENLISTMENT BONUS PROGRAM

Enlistment bonuses are governed by section 309(a) of title 37 United States Code, Department of Defense (DOD) Directive 1304.21, and Marine Corps Order 1130.53P. According to DoD Directive 1304.21, the Secretary of the Military Department establishes the standards for awarding an enlistment bonus and the value of enlistment bonuses, but enlistment bonuses may not exceed the maximum amount prescribed in section 309(a) of Title 37.[10] "The intent of

[9] Highly qualified applicants are generally considered to be high school graduates that score a 50 or higher on the Armed forces Qualification test.

[10] DoD Dir 1304.21

enlistment bonuses is to influence personnel inventories in specific situations in which less costly methods have proven inadequate or impractical."[11]

In accordance with MCO 1130.53P, "The EBP provides monetary enlistment incentives to attract highly qualified applicants into designated programs containing critically short MOSs, to fill those technical fields with high prerequisites, and to entice applicants to ship to recruit training during certain times of the year."[12] The award levels of enlistment bonuses and programs eligible for a bonus are determined by MPP-20 and published via MARADMIN message before the beginning of each fiscal year. Within the EBP, there are two categories of bonuses: a bonus tied to an enlistment program and a bonus tied to shipping to recruit training during certain times of the year.

Enlistment programs apply to several different MOSs. Applicants who enlist in the Marine Corps are not guaranteed a specific MOS. They are guaranteed an enlistment program and the Marine Corps will assign the applicant one of the MOSs within the enlistment program. The number and type of enlistments programs has varied over time, but currently the Marine Corps has approximately 35 different enlistment programs. The Marine Corps' 233 enlisted MOSs are divided up amongst the 35 different enlistment programs. For example if an applicant enlists in the Electronics Maintenance program, he or she would be assigned one of the 13 different MOSs as shown in Figure 3.

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[11] DoD Dir 1304.21

[12] MCO 1130.53P dated 11 Jun 2002

PEF/ MOS	Description	SEX	TOE	Test Scores
BY	ELECTRONICS MAINTENANCE	M/F	5	EL110
2100	Ordnance			No test
2171	Electro-Optical Ordnance Repairer			score waivers
2800	Data/Communications Maintenance			
2822	Electronic Switching Equipment Technician			
2831	AN/TRC-170 Repairer			
2844	Ground Communications Organizational Repairer			
2846	Ground Radio Intermediate Repairer			
2847	Telephone Systems/Personal Computer Intermediate Repairer			
2871	Test Measurement and Diagnostic Equipment Technician			
2881	2M/ATE Technician			
2887	Artillery Electronics Technician			
5900	Electronics Maintenance			
5937	Aviation Radio Repairer			
5942	Aviation Radar Repairer			
5962	Tactical Data Systems Equipment (TDSE) Repairer			
5963	Tactical Air Operations Module Repairer			

Figure 3. Electronics Maintenance Enlistment Program
(Source: MCO 1130.53P dated 11 June 2002)

Just because an enlistment program has a bonus does not mean that every applicant who enlists into that program will receive the bonus. For example, in FY 2000 the Marine Corps had a requirement of 965 applicants for the electronics maintenance program, but there were only 431 bonuses allocated for the program. Fifty-five percent of the applicants who enlisted in the electronics maintenance program did not receive a bonus.

Unlike the Army, which pays enlistment bonuses in anniversary payments over the term of the enlistment, enlistment bonuses in the Marine Corps are paid in one lump sum. MCO 1130.53P states that "in order to receive the bonus, the applicant must complete all required training and be qualified in an MOS within the specified EBP."[13] All

[13] MCO 1130.53P dated 11 Jun 2002

Marines who receive an enlistment bonus that is tied to an MOS are required to serve in billets requiring their primary MOS. Additionally, the Marine must maintain the MOS throughout his or her entire term of enlistment. A Marine who fails to complete the full term of enlistment is required to repay a pro rata share of the enlistment bonus.[14]

Applicants must meet certain eligibility requirements to qualify for an enlistment bonus program. The eligibility requirements tend to remain constant, but there have been changes over time. An overview of the eligibility requirements for the EBP is shown in Table 3. Applicants that enlist in EBP are required to fill out a Statement of Understanding (SOU). The SOU serves as a contract between the applicant and the United States Marine Corps. The SOU lays out in detail the eligibility requirements for the program, the value of the bonus, the term of enlistment, the MOSs within that EBP, and the reasons for disqualification from the EBP.

[14] MCO 1130.53P dated 11 Jun 2002

Table 3. Marine Corps EBP eligibility requirements

1. Non-prior service applicant or a prior service applicant who has not previously received an enlistment bonus.
2. Reservists not on active duty who enlist in the active component must not have been previously awarded an enlistment bonus or reenlistment bonus, or currently be entitled to a reenlistment bonus.
3. Tier 1 high school graduate.
4. Meet minimum AFQT score, required line scores, and all other prerequisites of the program.
5. No drug/moral waiver above recruiting station level.

(Source: From MCO 1130.53P dated 11 June 2002)

Applicants who enlist for an EBP can become disqualified for the EBP while in the delayed entry program or during their enlistment. An overview of the circumstances that would lead to disqualification is shown in Table 4.

Table 4. Circumstances for disqualification from EBP

1. Using drugs while in the delayed entry program.
2. Failure to complete a required course of training and maintain the designated MOS throughout the term of enlistment.
3. Inability to obtain a required security clearance.
4. Disciplinary action (including NJP).
5. Not divulging required information regarding education or other qualifications for the program.
6. Entry-level separation.
7. Failure to complete term of enlistment.
8. Failure to receive an honorable discharge.
9. Failure to reveal previous bonus received.

(Source: From MCO 1130.53P dated 11 June 2002)

B. INCORPORATION OF THE ENLISTMENT BONUS PROGRAM

The Marine Corps EBP program has been around for many years, but until recently only a fraction of the enlistment programs qualified for a bonus. This research found that historical information on the EBP is limited, so it is difficult to determine the exact date that the Marine Corps incorporated the EBP. It could be stated that the first Marine Corps enlistment bonus was offered in 1775, when Captain Robert Mullen offered a recruit a free tankard of ale for enlisting in the Marine Corps.[15] For the purposes of this study it will be determined that the Marine Corps incorporated the EBP around 1972. In June 1972, the Marine Corps began offering a $1,500 combat arms enlistment bonus (CB) (Palomba, 1983). The CB program was used to fill MOSs within the infantry, artillery, and tank communities. The monetary incentive of the CB program was increased to $2,500 in FY 1974. In addition, the Marine Corps incorporated a $2,500 technical bonus (TB) program in FY 1975 that was reduced to $1,500 in FY 1976. The monetary values of the programs from FY 1973- FY 1981 are shown in Table 5.

[15] Captain Robert Mullen was the first Marine Corps Recruiter (Source: www.recruitknowledge.com/pages/history/mch1.htm).

Table 5. Monetary value of TB and CB programs

Dollar Amount for Bonus Payments		
Fiscal Year	**TB**	**CB**
1973	-	$1,500
1974	-	$2,500
1975	$2,500	$2,500
1976	$1,500	$2,500
1977	$1,500	$2,500
1978	$1,500	$2,500
1979	$1,500	$2,500
1980	$1,500	$2,500
1981	$3,000	$2,500

(Source: (Palomba, 1983), Table 2)

The number of bonus allocations was small, so only a fraction of qualified recruits received an enlistment bonus (Palomba, 1983) as shown in Table 6. The recruiting goal for FY 1978 through FY 1981 was not available, but the Marine Corps annual recruiting goal for the past ten years has been around 30,000 recruits. If the recruiting goal in the late 70's and early 80's was similar, around 11 percent of the recruits would have received an enlistment bonus.

Table 6. Bonus attainment/allocation by year

TB Program				CB Program		
Year	**Attainment**	**Allocation**	**%**	**Attainment**	**Allocation**	**%**
1978	1,000	1,000	100.0	2,340	2,340	100.0
1979	1,101	1,089	101.1	2,357	2,341	100.6
1980	1,125	1,298	86.6	2,339	2,342	99.8
1981	1,151	1,320	87.2	2,690	2,690	100.0

(Source: (Palomba, 1983), Table 3)

As with the current EBP, recruits had to meet minimal eligibility requirements to qualify for the programs. The TB program required recruits to be high school graduates,

U.S. Citizens, and to meet prescribed score requirements on the ASVAB. A recruit enlisting in the CB program had to be male, have a high school diploma or GED, and to meet prescribed score requirements on the ASVAB. The eligibility requirements for the CB and TB programs are shown in Table 7.

Table 7. Eligibility Requirements for the CB and TB

Test score requirements for the enlistment bonus program		
ASVAB	**TB**	**CB**
AFQT	50	31
GT	110	90 (95 for GED)
EL	120	-

(Source: From (Palomba, 1983), Table 1)

A key difference in the eligibility requirements of the CB program and future EBPs is the minimum AFQT score of 31 and the fact that recruits with GED's qualified for an enlistment bonus. Sometime after FY 1981, all applicants were required to have a minimum AFQT of 50 and be a high school graduate to qualify for an enlistment bonus. As will be shown later, the minimum AFTQT requirement changed again in FY 2006. This study was only able to find information on the CB and TB programs up to FY 1981. After FY 1981, there is limited information on the EBP until the mid 1990's.

There was a period where the Marine Corps EBP budget was almost nonexistent. The EBP budget in FY 1994 was only 750 thousand dollars. The Marine Corps had allotted more

money for the EBP program in 1978.[16] After FY 1994, the EBP budget increased each year until it reached more than 6 million dollars in FY 2000. The EBP budget for FY 1978 through FY 1981 and FY 1994 through FY 2005 are shown in Table 8.

Table 8. EBP budget (FY78-FY81 & FY94-FY05)

Budget for Enlisted Bonus Program			
Fiscal Year	**Budget (millions)**	**Fiscal Year**	**Budget (millions)**
FY78	7.350[a]	FY98	2.75
FY79	7.486[a]	FY99	5.204
FY80	7.80[a]	FY00	6.729
FY81	10.685[a]	FY01	6.655
FY94	.750	FY02	6.995
FY95	1.355	FY03	8.49
FY96	3.12	FY04	9.416
FY97	3.615	FY05	5.802

a: The actual budget for the EBP was not available, so the bonus amount was multiplied by the number of allocations to determine the EBP budget.

(Source: HQMC, M&RA, Enlisted Plans Section)

In FY 1999 the EBP offered two types of shipping bonuses: a 2,000 dollar bonus for shipping in the months of June through November and a 3,000 dollar bonus for shipping in the months of December through May. The intent was that recruiters typically had more difficulty finding applicants to ship to recruit training between December and May, so a

[16] The actual budgets for the EBP in the late 1970's were not available, so this study multiplied the bonus amounts by the number of allocations to determine the EBP budgets in the late 1970's. The EBP budgets in the late 1970's were more than 6 million dollars.

higher shipping bonus was offered in those months. In addition there were five enlistment programs that qualified for a bonus in FY 1999: the Aircrew Enlistment program, Electronics Maintenance program, Aviation Operations program, Fire Direction & Control Specialist program, and the Cryptologic Linguist program. In FY 2000 the Aircrew Enlistment program was dropped and the Public Affairs program and the Aviation Electronics Technician program were added to the EBP. The Marine Corps EBP program remained virtually unchanged for several years, as shown in Tables 9 and 10. The only change was the number of bonuses allocated each year. According to an official at MCRC, the Marine Corps was consistently meeting its recruiting goal and the EBP had a limited budget, so manpower officials chose not to make any changes to EBP.

Table 9. FY 2005 Enlistment Programs with Bonuses

Program	Bonus Dollar Value	Term	Allocations per fiscal year					
			FY99	FY00	FY01	FY02	FY03	FY04	FY05
Electronic Maintenance	5,000	5	[b]	431	500	520	578	412	644
Aviation Operations	4,000	5	[b]	85	120	118	124	108	134
Public Affairs	4,000	4	—	15	15	12	35	18	31
Fire Dir & Ctrl Spec	6,000	4	[b]	187	210	196	178	143	192
Crypto Linguist	4,000	5	[b]	24	50	50	109	71	106
Aviation Elect Tech	3,000	5	—	539	650	594	490	475	543
Aircrew Opt	3,000	[a]	[b]	—	—	—	—	—	—
National Call to Service	[c]	2	—	—	—	—	—	—	240

[a] Length of term not available.
[b] Bonus offered, but number of allocation not available.
[c] Applicants selected one of the following four incentives: $5,000 bonus or $10,000 student loan repayment or 12 month education allowance or 36 month education allowance at ½ monthly rate.

(Source: MCRC, End of FY recruiting report)

Table 10. FY 1999 – FY 2005 EBP (Shipping Bonus)

Shipping Bonus								
		Allocations per fiscal year						
Time Period	Dollar Amount	FY99	FY00	FY01	FY02	FY03	FY04	FY05
Dec-May	$3,000	[a]	1327	[a]	1154	1248	1480	456
Jun–Nov	$2,000	[a]	555	[a]	956	161	56	35
[a] Shipping bonus offered, but number of allocations not available.								

(Source: MCRC, End of FY recruiting report)

Major revisions were made in the EBP in FY 2006 through FY 2008. There are several reasons that led to revising the EBP, but the main contributor was the increase in recruiting goals to meet the Marine Corps' new end strength. In 2006 plans were made to increase the Marine Corps end strength from approximately 181,000 in FY 2006 to 202,000 in FY 2011. Increasing end strength required increasing the annual recruiting goals, as shown in Table 11.

Table 11. Marine Corps end strength and accession missions.

Marine Corps Active Duty Force	FY07	FY08	FY09	FY10	FY11
End Strength Goal	184,000	189,000	194,000	199,000	202,000
Enlisted Strength	166,783	172,489	178,663	181,180	180,865
Enlisted Accession Mission	35,576	37,967	39,800	40,400	41,400
Officer Accession Mission	1,975	2,220	2,370	2,428	2,277
Reenlistment Mission	16,098	17,631	18,100	18,400	18,700

(Source: HQMC, M&RA, Enlisted Plans Section)

Increasing the recruiting goals encouraged officials at MPP-20 and MCRC to take a hard look at the current incentive programs, which led to increases in the EBP budget. At the end of FY 2006, MPP-20 and MCRC determined that changes needed to be made in the EBP to increase its effectiveness. One requirement was that MPP-20 and MCRC conduct an annual review of the EBP. This ensured that MPP-20 received adequate feedback from the recruiters. In addition, recruiters were given the opportunity to recommend incentives they thought would be most beneficial in meeting recruiting goals. Furthermore, increasing the EBP budget gave MPP-20 the flexibility to develop a more versatile program. The FY 2007 EBP budget increased from 10.6 million dollars to 47 million dollars in January 2007, as shown in Table 12.

Table 12. FY 2005 through FY 2008 EBP budget

Marine Corps EBP Budget	
Fiscal Year	Budget in millions
FY05	5.802
FY06	6.257
FY07	47[a]
FY08	81
[a] Initial budget was 10.6, increased to 47 in January 2007.	

(Source: HQMC, M&RA, Enlisted Plans Section)

The end of FY 2005 marked the beginning of the major revisions in the Marine Corps' EBP. The EBP went from seven enlistment programs in FY 2005 to fourteen enlistment programs eligible for a bonus in FY 2007. The maximum value

of enlistment bonuses more than doubled, and eligibility requirements were modified for specific enlistment programs. The enlistment programs in the EBP for FY 2005 through FY 2008 are shown in Table 13.

Table 13. FY05-FY08 Enlistment Programs with Bonus

Bonus Program	Dollar Value	Term	Allocations per fiscal year			
			FY05	FY06	FY07	FY08
Electronic Maintenance	5,000	5	644	533	350	-
	15,000		-	-	-	500
Public Affairs	4,000	4	31	36	-	-
Aviation Operations	4,000	5	134	155	109	-
Fire Dir & Ctrl Specialist	6,000	4	192	201	201	203
Cryptologic Linguist	4,000	5	106	104	125	-
	15,000		-	-	-	281
Aviation Electronic Tech	3,000	5	543	554	204	-
National Call to Service	[a]	2	240	308	338	-
Reconnaissance	10,000	4	-	402	416	399
Arabic Interpreter	4,000	4-6[b]	-	[c]	[c]	-
	12,000		-	[c]	[c]	-
Transportation	5,000	4	-	-	216	-
	10,000		-	-	-	501
Supply & Accounting	5,000	4	-	-	197	-
	10,000		-	-	-	603
Logistics	5,000	4	-	-	260	-
Intel/ Grd Elect Warfare	6,000	5	-	-	165	102

Bonus Program	Dollar Value	Term	Allocations per fiscal year			
			FY05	FY06	FY07	FY08
Command & Ctrl Electrician	10,000	4	-	-	-	625
Infantry	7,500	5	-	-	-	900
	15,000	6	-	-	-	300
Marine Corps Music	10,000	4	-	-	[c]	36
X1[d]	10,000		-	-	1028	-

[a] Four incentives to choose from: $5,000 bonus or $10,000 student ln repayment or 12 month education allowance or 36 month education allowance (½ monthly rate).

[b] Term of enlistment depended on enlistment program selected.

[c] Bonus offered, but number of allocations not available.

[d] Targeted bonus to entice applicants to enlist in critically low programs (Supply/Acct, Transportation, Communications, Electronic/Data program) and ship to recruit training in Aug-Sep 2007.

(Source: MCRC, End of FY recruiting report)

In FY 2006 only three additional enlistment programs were incorporated into the EBP, but changes in the eligibility requirements opened the doors for future enlistment programs. For several years applicants were required to have a minimum AFQT of 50 to receive any type of enlistment bonus. In FY 2006 an applicant enlisting into the Arabic interpreter program could receive a 4,000 dollar bonus with a minimum AFQT of 21 and a 12,000 bonus with a minimum AFQT of 31.

Revising eligibility requirements continued into FY 2007 when the minimum AFQT requirement for shipping bonuses and the X1 enlistment program was reduced to 31. In addition to reducing the AFQT requirement for shipping bonuses, there was only one monetary value offered in FY

2007.[17] It was a 3,000 dollar shipping bonus that could be offered for any month in FY 2007. Furthermore, the number of shipping bonuses allocated in FY 2007 was significantly higher than in previous years. Table 14 provides the shipping bonuses for FY 2005 through FY 2008.

Table 14. FY05-FY08 Shipping Bonuses

Time Period	Dollar Amount	Allocations per fiscal year			
		FY05	FY06	FY07	FY08
Dec-May	$3,000	456	562	-	-
Jun–Nov	$2,000	35	323	-	-
All Year	$3,000	-	-	10945	-
	$5,000	-	-	-	7300

(Source: MCRC, End of FY recruiting report)

The X1 program in FY 2007 was unique. It was a 10,000 dollar targeted enlistment bonus incorporated mid-year to entice applicants to enlist into critically low enlistment programs and ship to recruit training in August through September 2007. The programs offering the bonus were Supply and Accounting, Transportation, Communications, and Electronic Data. The Supply and Accounting program and Transportation program already offered a 5,000 dollar bonus in FY 2007, but the programs required a minimum AFQT of 50. The X1 program aided in enlisting 935 applicants into four critically short enlistment programs. In addition to the X1 program, three more enlistment programs were incorporated into the EBP in FY 2007, as shown in Table 13.

[17] In previous years there was a 3,000 dollar shipping bonus for shipping to recruit training in December through May and a 2,000 dollar shipping bonus for shipping to recruit training in June through November (MCRC, End of year reports).

In FY 2008, MPP-20 and MCRC continued to revise the EBP. Enlistment programs that they determined did not require an enlistment bonus for FY 2008 was removed from the EBP and that money was diverted to other enlistment programs, as shown in Table 12. MPP-20 and MCRC also reviewed the requirements for all enlistment programs in the EBP and decided to revise the enlistment bonus requirements for three enlistment programs. The minimum AFQT requirement was reduced for the Transportation, Supply and Accounting and the Command and Control/Electrician programs. The intent behind the revision is to give applicants who are qualified for a critically low enlistment program, but not qualified for an enlistment bonus, an incentive to select critically low enlistment programs.[18] Revising the minimum AFQT requirement for certain enlistment programs is also intended to increase enlistments in critically low enlistment programs.[19] The minimum AFQT and line score requirements for the FY 2008 EBP are shown in Table 15.

Table 15. FY 2008 EBP minimum AFQT/line score (individual components of the AFQT) requirements.

Program[a]	AFQT	GT	MM	CL	EL
Electronics Maintenance	50	-	-	-	110
Fire Dir & Ctrl Specialist	50	105	-	-	-
Cryptologic Linguist	50	105	-	-	-
Reconnaissance	50	105	-	-	-
Transportation	40	-	85	-	-

[18] Phone interview with official within MPP-20.

[19] Phone interview with official within MPP-20.

Supply/Acct.	40	-	-	105	-
Intel/ Grd Elect Warfare	50	100	-	-	-
Command & Ctrl Electrician	40	-	-	-	95
Infantry ($15,000)	50	100	-	-	-
Infantry ($7,500)	50	90	-	-	-
Music	50	-	-	-	-
Shipping Bonus	31	-	-	-	-

a This table only provides the ASVAB requirements. There are additional requirements specific to each enlistment program an applicant must meet to be eligible for the EBP.

(Source: MCRC, Statement of Understanding for Enlistment Incentives)

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III. LITERATURE REVIEW

Since the inception of the all-volunteer force in 1973, the United States Armed Forces has been offering competitive compensation packages in order to recruit enough volunteers (Warner & Asch, 2001). Aside from increasing military basic pay, the services increased the use of monetary incentives to attract recruit-age youths.[20] There have been numerous studies on military enlistment bonuses, but this study found only one study on Marine Corps enlistment bonuses. The lack of Marine Corps studies could be due to the fact that the incentive programs in the Marine Corps have been relatively small, making it difficult to estimate bonus effects.

A. METHODOLOGIES OF PREVIOUS STUDIES

The methodologies of previous studies have varied, but generally they used regression analysis on historical data or analysis of survey responses. The advantage of historical data is that it tends to be readily available and it captures real choices with binding decisions. In addition, researchers can infer which of the available incentives is the most popular by analyzing the choices of enlistees (Kraus, Griffis, & Golfin, 2000). One drawback is that historical data provides information only on people who joined the military and cannot be used to evaluate the effectiveness of incentives never accepted. The drawback to surveys is that applicable surveys are not always available; and developing surveys and collecting the data

[20] Recruit age youths are normally categorized as 17-21.

can be time-intensive and costly. The benefit of surveys is that researchers can learn which incentives are preferred by recruit-age youths. Because only opinions rather than actions are involved, surveys can include incentives not offered as well as those already in use (Palomba, 1983). The remainder of this chapter will provide summaries of the results of previous studies on enlistment bonuses.

B. SURVEYS

Surveys used to analyze monetary incentives vary in complexity, but they typically gather data from either the civilian youth population or military recruits. An advantage to collecting information from military recruits or enlistees is that they are more accessible and they are familiar with military programs. Recruits and enlistees can also provide insight into why they chose to enlist, what they would have done in the absence of an incentive, and what decisions they would have made if other incentives had been offered. Information from military recruits is beneficial when trying to determine how to channel applicants into critically short enlistment programs (Kraus, Griffis, & Golfin, 2000). However, since military recruits chose to enlist they can not provide information as to why others chose not to enlist. The advantage to collecting information from the civilian youth population is that they can provide insight into why people choose not to enlist and what incentives would encourage them to consider enlisting in the military. Collecting information from the civilian youth population is very useful when military services are trying to expand their recruiting market (Kraus, Griffis, & Golfin, 2000).

1. Survey Data from Marine Corps Enlistees

Catherine A. Palomba conducted a study on the Marine Corps enlistment bonus program in 1983. By analyzing survey data the author was able to determine the effect of the EBP on enlistment supply. The survey was conducted by the Rand Corporation in 1979 and administered to Marine Corps enlistees at the military entrance processing station (Palomba, 1983). The survey consisted of four different forms with three to four questions on each form. The author chose to use form-1 and form-3 because they were deemed most relevant to the study (Palomba, 1983). The questions on form-1 and form-3 were identical except form-1 had one additional question. Approximately 937 enlistees completed form-1 and 898 enlistees completed form-3 (Palomba, 1983). The survey questions used in the study are provided in Table 16 and the responses to the first question are provided in Table 17.

Table 16. Survey Questions

1. Did you sign up for a job which pays a cash enlistment bonus when you complete your job training? (Yes, No, I don't know) 2. How much is your bonus? (500, 1000, 1500, 2000, 2500, 3000) 3. Suppose the job you signed up for did not pay a cash bonus. What would you have done? (Same service/same job, Same service/different job, Different service, Not enlisted) 4. If you could choose the length of your first enlistment how many years of active duty would you sign up for?[a] (Less than 4 years, 4 years or more)
[a] Question 4 was only on form-1.

(Source: Palomba, 1983)

Table 17. Responses to Question 1.

BONUS QUESTION				
RESPONSE	Form 1		Form 3	
	Number	Percent	Number	Percent
Yes	133	14.2	107	11.9
No	369	39.4	383	42.6
I don’t know	401	42.8	350	39.0
No Answer	34	3.6	58	6.5
Total	937	100.0	898	100.0

(Source: Palomba, 1983, Table 7)

Palomba reported that “of the 937 Marine Corps enlistees who completed form-1, 133 answered yes to the bonus question” (Palomba, 1983). There were 369 “No” responses and 401 “I don’t know responses”. The author stated that the large number of “I don’t know” responses was probably due to the wording of the question. The survey asks the enlistee if they signed up for a job that pays a cash bonus. Enlistees would have known if they had received a cash bonus, but they may not have known if the job they enlisted for was eligible for a bonus. The results on form-1 and form-3 were similar as shown in Table 17. The next step taken by the author was to review the responses to questions 2 and 3. Questions 2 and 3 only applied to the enlistees who stated they received a cash bonus. The responses for question 2 and 3 are shown in Table 18 and Table 19.

Table 18. Responses to Question 2

BONUS AMOUNT				
Response	Form 1		Form 3	
	Number	Percent	Number	Percent
500	12	9.0	10	9.3
1000	4	3.0	3	2.8
1500	38	28.6	23	21.6
2000	9	6.8	3	2.8
2500	59	44.3	62	57.9
3000	3	2.3	0	0
No answer	8	6.0	6	5.6

(Source: Palomba, 1983, Table 8)

During the time period this survey was given the Marine Corps offered only a $1,500 and a $2,500 bonus. Several of the enlistees stated they received a different amount as shown in Table 18. The author does not provide the details as to why the survey provided options that were not offered. Providing different options may have been used to determine how much or how little the enlistees knew about enlistment bonuses. Since the survey does not ask the enlistees which enlistment program they signed up for, the author tries to determine what program the enlistees signed up for by comparing the bonus amount selected and the amount offered by the Marine Corps during that time period.

Table 19. Responses to Question 3 (Alternatives to Bonus Enlistment)

Alternatives	Form 1		Form 3	
	Number	Percent	Number	Percent
Same service, same job	87	65.4	77	72.0
Same service, different job	28	21.1	22	20.6
Different service	5	3.7	4	3.7
Not enlisted	9	6.8	3	2.8
No answer	4	3.0	1	.9

Alternatives	Form 1		Form 3	
	Number	Percent	Number	Percent
Total	133	100.0	107	100.0

(Source: Palomba, 1983, Table 8)

One of Palomba's objectives was to determine how many enlistments among the bonus recruits were gained due to the enlistment bonus. The study used the responses to question 3 to estimate the enlistments gains. The responses to the alternatives offered in lieu of an enlistment bonus are provided in Table 19. "Averaging the results for those answering the ALTERNATIVES question on either form 1 or form 3, 70 percent of the respondents would have chosen the same service and the same job while an additional 21 percent would have chosen the same service but a different job" (Palomba, 1983). "The residual, 9 percent, is the gain in manpower to the Marine Corps among bonus recruits" (Palomba, 1983). The author does not determine the actual gain to all Marine Corps accessions, but it would be significantly smaller. One way to get an idea of the gain to the Marine Corps is to consider the total number of enlistees in the survey. The survey consisted of approximate1y 1835 enlistees and 21 of those enlistees would not have joined the Marine Corps in the absence of an enlistment bonus. That works out to be a 1.14 percent gain in manpower among the enlistees in the survey. The author also wanted to determine the effectiveness of the enlistment bonus in channeling enlistees into critical programs. Palomba stated that the enlistment bonus resulted in 30 percent more enlistees selecting a critical skill.

Form-1 had a fourth question that applied to enlistees who stated they would have enlisted without an enlistment bonus. The question asked the enlistees about their desired length of service. Fifty-five percent of the enlistees who said they would have enlisted in the same job stated that they would prefer a term less than four years, as shown in Table 20.

Table 20. Responses to question 4

Enlistees who would have joined the Marine Corps without a bonus		
Choice of term	Same Job	Different Job
Less than 4 years	46 (55%)	15 (58%)
4 or more years	37	11
Total	83	26

(Source: Palomba, 1983, Table 9)

The author states that the results suggest that an enlistment bonus could lengthen the term of service for 55 percent of the enlistees who would have enlisted anyway. Of course, the enlistee would prefer a four-year term. What incentive would encourage the choice of a longer term?

The study does not provide enough information about the survey to determine if the survey respondents are a good representation of all Marine Corps enlistees. The sample size was adequate, but there could have been some selection bias. Some things to consider are the geographic area the survey was taken from, whether the survey was voluntary, as well as that all of the respondents had chose to join the Marine Corps. The survey would have been more informative if it had incorporated some questions that offered different enlistment options in order to infer

enlistee preferences. In all, the study did show that a simple survey given to Marine Corps enlistees could provide some useful feedback.

The nine percent gain to manpower among bonus enlistees may show that enlistment bonuses are not a key deciding factor to people joining the Marine Corps. This supports the results of other studies. For example, a RAND study conducted in 2000 looked at the effects of military pay on high quality contracts. The RAND study determined that the Marine Corps pay elasticity in relation to accessions was significantly lower than that of the other services (Asch, Hosek, Arkes, Fair, Sharp, and Totten, 2002)[21]. The authors' results of a 30 percent gain in critical enlistment programs shows that enlistment bonuses can be a effective tool in channeling enlistees into critically short enlistment programs. The study conducted by Palomba also used pay elasticity to analyze Marine Corps enlistment bonuses. That method will be discussed later in the chapter.

2. Surveys from the Civilian Youth Population

CNA conducted a choice-based conjoint study of recruitment incentives for the Navy Recruiting Command (NRC) in 2000. The purpose of the study was to find new and innovative incentive packages to attract a greater number of high-quality applicants (Kraus, Griffis, & Golfin, 2000). CNA chose to use a market research approach over using historical data because the authors stated that it

[21] Table 2.2 of "Military Recruiting and Retention After the Fiscal Year 2000 Military Pay Legislation" by Asch, Hosek, Arkes, Fair, Sharp, and Totten provides additional information.

provided two distinct advantages: “First, NRC wants to know how to use larger financial incentives and new non-financial incentives to expand its share of the employment market” (Kraus, Griffis, & Golfin, 2000). Analysis of new programs cannot be done using historical data. Second, the market research approach allowed the authors to collect information on young people who have not yet made an enlistment decision (Kraus, Griffis, & Golfin, 2000).

A “conjoint analysis” is “a marketing research tool that permits the user to analyze customer preferences among competing products” (Joles, Charbonneau, & Barr, 1998). A choice-based version has young people repeatedly select, from a short list, which enlistment package they would prefer. “The data generated from a survey allow inferences to be drawn about people’s preferences for different product attributes based on the choices they made on each task” (Kraus, Griffis, & Golfin 2000).

The survey was delivered in two mailings to 4,400 high school students and 600 community college students. In order to encourage response rates the authors offered a monetary incentive. The first mailing consisted of 1,500 packets with a two-dollar incentive, 1000 packets with a one-dollar incentive and 500 packets with no incentive (Kraus, Griffis, & Golfin 2000). The authors decided to offer an incentive for all of the packets in the second mailing due to the low response rate of the no incentive group in the first mailing. The response rates are provided in Table 21.

Table 21. Survey response rates

	Incentive			
	No incentive	$1	$2	Total
Mailing 1	5.5%	12.5%	15.4%	11.0
Mailing 2	-	10.2%	15.6%	12.9
Total	5.5%	11.8%	15.5%	11.4%[a]

[a]Seventy-seven of the 5000 packets were returned because they had incorrect addresses. Response rate based on 4923 packets.

(Source: Kraus, Griffis, & Golfin 2000, Table 1)

The authors observed that “the hypothetical enlistment packages in the survey had four different components: a Navy job, financial incentive, specified length of obligated service, and an amount of college credit that can be earned as a result of Navy training” (Kraus, Griffis, & Golfin, 2000). The levels were based on current and proposed enlistment incentive packages. The survey consisted of 20 tasks and in each task the respondents were asked to select one of three enlistment packages or to choose none. Choosing none indicated that none of the three packages would encourage the respondent to join the Navy. The survey also collected data to determine the respondent’s propensity to join the Navy.

The first and last question of the survey asked the respondents: “How likely are you to serve in the Navy?” The responses choices were: definitely, probably, probably not, and definitely not (Kraus, Griffis, & Golfin 2000). The purpose of these questions was to determine the respondents’ propensity to join the Navy. The study used

three categories of propensity: High-propensity[22], Medium-propensity[23], and No-propensity[24]. The objective of the study was to expand the Navy's share of the employment market, so the authors wanted to focus on the preferences of the medium-propensity respondents. The medium-propensity respondents were considered to be sitting on the fence, but could be persuaded to join the Navy. The survey also asked the respondents questions to determine demographic characteristics and educational status.

The high-propensity group was more likely to be male, younger than eighteen, and less likely to be college bound than the medium-propensity group. The No-propensity group was more likely to be female and slightly older than eighteen.[25]

Once the survey data was collected a statistical model was used to estimate the probability of selecting one attribute over another. The statistical model used in this study was a conditional logit model. "What distinguishes this model from traditional regression models is that the behavior of interest, or the dependent variable, is characterized by a discrete rather than a continuous variable" (Kraus, Griffis, & Golfin, 2000). The authors state that the logit model estimates the effects of the

[22] High-propensity respondents answered "definitely" or "probably" at the beginning and the end of survey.

[23] Medium-propensity respondents answered "probably not" or "definitely not" at the beginning and "definitely", "probably", or "probably not" at the end of the survey.

[24] No-propensity respondents answered "definitely not" at the end of the survey.

[25] Additional information on demographic characteristics can be found on page 17 of the study.

choices made by the respondents. The logit output for the model using the data from the medium-propensity respondents is shown in Table 22. The logit model "allowed the authors to adopt the assumption that people evaluate the overall attractiveness of a choice by summing the utilities associated with each of the attributes of the choice" (Kraus, Griffis, & Golfin, 2000).

Table 22. Logit output for medium-propensity[26]

	Attribute-level	Effect (std. dev.)
1 Occupation	Electronics	-0.0224 (.04097)
2	Computer	0.2466 (.03882)***
3	Engineering	0.1517 (.03956)***
4	Submarine	-0.5304 (.4685)***
5	Aviation	0.1544 (.0454)***
6 Term length	4 years	0.6165 (.03180)***
7	5 years	0.2735 (.03355)***
8	6 years	-0.1202 (.0365)***
9	8 years	-0.7698 (.04417)***
10 Incentive	5K EB	-0.6510 (.07252)***
11	10K EB	-0.2783 (.06456)***
12	20K EB	0.1072 (.05806)
13	30K EB	0.3156 (.05575)***
14	30K NCF	-0.0101 (.05991)
15	50K NCF	0.4080 (.05479)***
16	70K EB	0.6433 (.05271)***
17	10K EB & 40K NCF	0.5468 (.05384)***
18	No incentive	-1.0815 (.08510)***

26 The estimated effects of the sum of the attributes in each category equal zero. For example, if you added the estimated effects of the attributes under occupation they would equal zero.

	Attribute-level	Effect (std. dev.)
19 College credit	<1 semester	-0.3842 (.04487)***
20	1 semester	-0.1743 (.04236)***
21	2 semesters	-0.0608 (.04146)
22	3 semesters	0.2258 (.03896)***
23	4 semesters	0.3936 (.04041)***
24 None option	None	0.7271 (.03313)***
*** indicates significance at the .01 level		

(Source: Kraus, Griffis, & Golfin, 2000, Table 7)

Once the logit model has been estimated the utilities of the attributes in the enlistment packages are totaled. An enlistment package consists of an occupation, term of service, incentive, and college credit earned. “The next step was to exponentiate the total utility values for each enlistment package” (Kraus, Griffis, & Golfin, 2000). This value will be used to calculate the predicted probability of choice. An example of how the study calculated the predicted probabilities of choice is shown in Table 23.

Table 23. Calculating predicted probabilities of choice

Enlistment package 1		Enlistment package 2	
Attribute	Logit-estimated utility	Attribute	Logit-estimated utility
Computer	.247	Submarine	-0.530
4 years	.616	6 years	-0.120
$20K EB	.107	$50K NCF	.408
3 semesters	.226	<1 semester	-0.384

Total package value – Ui	1.196	Total package value – Ui	-0.626
Exp(Ui)	3.307	Exp(Ui)	0.534
Predicted probabilities of choice	86%	Predicted probabilities of choice	14%

(Source: Kraus, Griffis, & Golfin, 2000, Table 6)

If the respondents were forced to pick between the two enlistment packages in Table 23, 86 percent of the respondents would select enlistment package 1 according to the model. The survey had the respondents select from three enlistment packages and a "none" option. The method used to calculate the predicted probabilities of choice would be the same except there would be two additional enlistment packages to calculate.

The study focused on the medium-propensity and high-propensity respondents. The reasoning was that high-propensity respondents were more likely to join the service and medium-propensity respondents were the people that the Navy needed to attract to increase its recruiting market. The results were tabulated by using the calculated probability of choice to compare the trade-offs between different levels of an attribute.

The Navy College Fund (NCF) was found to be more than twice as popular as an EB of the same actuarial cost to the Navy. The NCF was also found to be more effective for medium-propensity respondents than high-propensity respondents (Kraus, Griffis, & Golfin, 2000). The relative preferences for actuarially equivalent incentives for

medium-propensity respondents are shown in Figure 4.[27] When given the choice between a $5K EB and a $40K NCF 70 percent would choose the $40K NCF as shown in Figure 4.

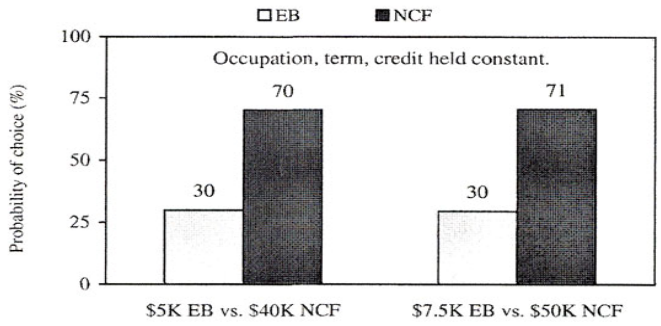

Figure 4. Relative preferences for actuarially equivalent incentives (EB vs. NCF)

(Source: Kraus, Griffis, & Golfin, 2000, Figure 7)

The authors demonstrated that enlistment bonuses could be used to channel enlistees into critical enlistment programs. The authors did this by calculating the probability of choice for the five occupations used in the survey. The authors then calculated the amount of enlistment bonus required to yield equal probabilities of choice for each occupation. The probability of choice for the occupations is shown in Figure 5. When given the choice to select one of the five occupations 30 percent of the high-propensity respondents would select the computer field and 11 percent would select the submarine field, as shown in Figure 5. The enlistments bonuses required to level the

[27] The study does not state how the authors determined that a $5K EB cost the Navy the same amount of money as a $40K NCF. A large portion of the 40K comes from the Montgomery GI Bill that all enlistees are entitled to. The authors may have also factored in the savings from service personnel never using the college fund.

playing field among the occupations are shown in Figure 6. The ability to estimate the required enlistment bonus to level the playing field among occupations could be useful in determining monetary incentives for critically short enlistment programs. The submarine occupation requires a 29K EB to yield the same probability of enlistments as a computer occupation with a 5K EB among the high-propensity group, as shown in Figure 6. The studies claim that occupations are more important to high-propensity respondents than medium-propensity respondents are supported in Figure 5 and Figure 6.

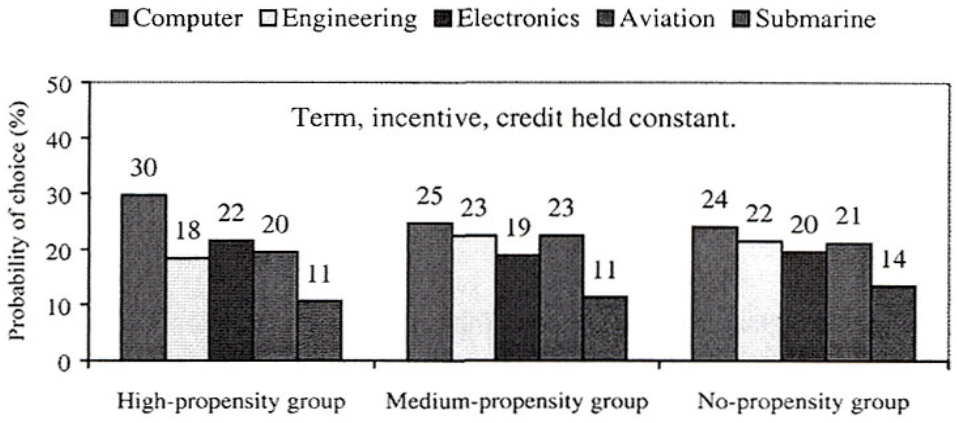

Figure 5. Probabilities of choice for occupation
(Source: (Kraus, Griffis, & Golfin, 2000, Figure 11)

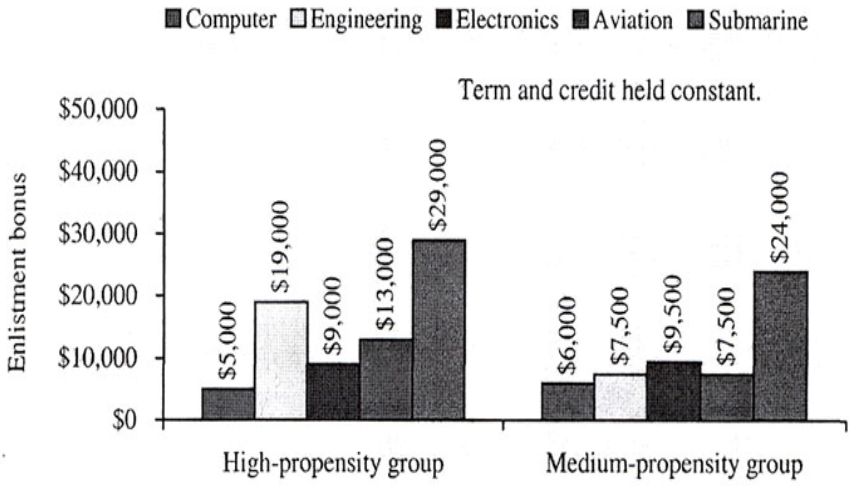

Figure 6. Enlistment bonuses that yield equal probabilities of choice

(Source: (Kraus, Griffis, & Golfin, 2000, Figure 12)

The study also compared the trade-offs between offering larger enlistment bonuses and increasing the length of obligated service. A six-year term required a $20K EB to yield the same probability of choice as a four-year term with a $5K EB among medium-propensity respondents. The cost per year for a four-year term was $1250 per year and the cost for a six-year term was $3333 per year. The trade-offs between larger EBs and one additional year of service for the medium-propensity group are provided in Figure 7.

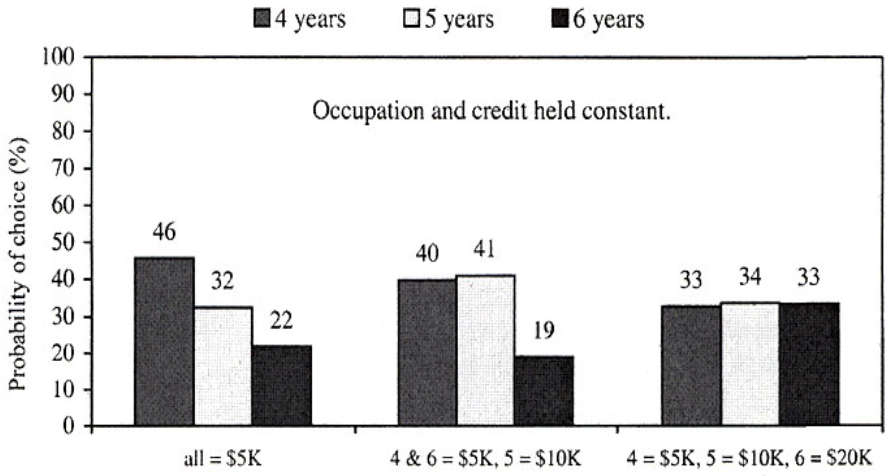

Figure 7. Trade-offs between EBs and service terms
(Source: (Kraus, Griffis, & Golfin, 2000, Figure 10)

The study also calculated the probability of choice for college credit earned through Navy training. The study stated that earning college credit was more important to medium-propensity respondents than high-propensity respondents. The study found that offering appropriate college credit for Navy training had a large positive effect on enlistment propensity (about 3 percent) and increasing obligations by just one year had a substantial negative effect on enlistment propensity (about 2 percentage points) (Kraus, Griffis, & Golfin, 2000). The study recommended offering college-related incentives and short obligations to target medium propensity youth (Kraus, Griffis, & Golfin, 2000).

The results and findings of the study led to some broad recommendations. The study provides some useful insight on what type of enlistment packages would be preferred by the respondents, but it does not state that offering a certain EB or NCF would increase or decrease

enlistments by a given percentage. The authors stated that they could predict enlistment propensity, but not the changes in the number of enlistments. This study was limited to five military occupations, however; actual enlistees have many occupations to choose from. Incorporating all of the occupations into the survey would have increased the complexity of the study. The estimations of this study were based on survey results from 497 respondents with 243 respondents considered to be medium-propensity and 43 respondents considered to be high-propensity respondents. The authors state that the estimates for the medium-propensity respondents were significant at the 1 percent level, but the authors do not comment on the significance level of the estimations for high-propensity respondents. The study did a lot of comparisons between the medium-propensity and high-propensity without commenting on the significance of the estimates for the high-propensity respondents.

In all, the study demonstrated that the choice-based conjoint analysis can be an effective tool in estimating relative preferences. The ability to calculate the incentives required to level the playing field among occupations or terms would be beneficial to the Marine Corps. The authors also demonstrated how the market research approach allows researchers to analyze new and existing incentives. This would be beneficial when trying to expand the recruiting market.

Another study (An Enlistment Bonus Distribution Model 1988) conducted by Joles, Charboneau, and Barr used choice-based conjoint analysis to develop an optimization model. The objective was to use a mixed-integer programming model

to assist decision-makers in the efficient and effective allocation of EB incentives (Joles, Charbonneau, & Barr, 1998).

This study used a survey conducted by the Urban Studies Institute at the University of Louisville. “In 1996 the Army recruiting command contracted the University to conduct a conjoint analysis study in order to better understand the relationship of a mix of attributes in recruitment packages” (Joles, Charbonneau, & Barr, 1998). The Urban Studies Institute subcontracted with malls in several cities to conduct mall-intercept surveys (Joles, Charbonneau, & Barr, 1998). The authors stated that the data obtained from the study demonstrated the potential of choice-based analysis, but could not be used to make reliable estimations of youth preferences.

The authors stated that non-feasible incentives were offered and it was not clear if the subjects or even the survey administrators understood the various enlistment alternatives (Joles, Charbonneau, & Barr, 1998). The authors also stated that illogical inferences were drawn from the data collected (analysis suggests, for example that, for an equivalent incentive package and MOS, applicants would prefer a five-year term over a four-year term) (Joles, Charbonneau, & Barr, 1998). In addition, the survey consisted of only seven MOS choices.

The authors went ahead and developed an optimization model to demonstrate the capability of integer programming to predict optimal enlistment incentives. The software available in this study limited the number of variables that could be used. The available software and the lack of adequate data prevented the authors from developing a model

that could predict optimal solutions. For this reason, this study will not go into the details of the optimization model used.

This study demonstrates the difficulty in obtaining accurate survey data. One of the many challenges in collecting survey data from the civilian population is the lack of knowledge of military programs. Participants understand the different lengths of terms, and college program versus enlistment bonus, but occupational choices can be more challenging. The study also shows that time and resources invested in surveys can produce less than desired results. This is another reason that some researchers prefer to use historical data when analyzing enlistment incentives.

C. HISTORICAL DATA

Researchers have used various regression analysis methods to analyze the cost effectiveness and to estimate the increase in accessions due to monetary incentives. The pay elasticity approach is a common method used by researchers to determine cost effectiveness and gains in accessions due to monetary incentives. Researches also use regression models to analyze the variation in monetary incentives. This allows researchers to estimate the effect that increasing the value or allocations of an enlistment bonus will have on a particular enlistment program.

1. Pay Elasticity

As discussed previously, Catherine Palomba conducted a study on Marine Corps enlistment bonuses in 1983, and in addition to analyzing survey data, the study used pay

elasticity to determine the effect of enlistment bonuses. The study estimated the effects of the TB and CB bonus on enlistments in FY 1979. The author chose FY 1979 because the survey data was collected in 1979 (Palomba, 1983).

The objective was to determine how many enlistments were gained due to enlistment bonuses. The author started by stating that the most recent estimates of pay elasticity for the Marine Corps were in the range of .5 to .7 (Palomba 1983).[28] Then the study determined the increment to pay which, if received over 4 years, would have the same discounted present value as the discounted present value of the bonus (Palomba 1983). The pay increment was added to FY 1979 military and civilian pay figures to determine the effect of the bonus on the military-to-civilian pay ratio. Then the pay increment was multiplied by the pay elasticity to obtain estimates of the enlistment supply effects (Palomba 1983). The study chose to use .5 and 1 as the pay elasticity for the Marine Corps. Assuming pay elasticity equals 1, the estimated percentage increase in enlistments were 0.69 percent for the TB and 0.84 percent for the CB. The estimated percentage increase in enlistments was used to calculate the number of new enlistments per 100 bonuses. The calculations used to estimate the number of enlistments per 100 bonuses is shown in Table 24. The TB resulted in an additional 7 enlistments per 100 bonuses and the CB resulted in an additional 12 enlistments per 100 bonuses as shown in Table 24. Using a pay elasticity of .5 would result in 3 to 4 new enlistments for the TB and 6 new enlistments for the CB.

[28] The author referenced a CNA study conducted in 1981.

Table 24. Enlistments per 100 bonuses

Bonus	Typical # of recruits	Estimated percentage increase in accessions	# of recruits gained from bonuses	Total # of bonuses	# of recruits gained per 100 bonuses
1500 TB	10,000	.69%	69	1,000	7
2500 CB	10,000	.84%	84	700	12
The calculations were made using pay elasticity equals 1.					

(Source: Palomba, Table c-2)

The pay elasticity method used in this study supports the results of previous studies that suggest that monetary incentives do not have a large impact on Marine Corps enlistments. What the estimates do not show is the effect the bonus had on channeling enlistees into the bonus programs. The method also limits itself by looking at only one year. Looking at more than one year may have produced different results.

2. Multiple Regression Analysis

John Warner, Curtis Simon and Deborah Payne conducted a study in 2001 that analyzed the college fund and other enlistment incentives. Data for all four services was collected for the period FY 1987 through FY 1996. This research stated that during the time period studied, less than 10 percent of Marine Corps enlistees received an enlistment bonus and less than 5 percent benefitted from

the Marine Corps College Fund. (Warner, Simon, and Payne, 2001). Since the incentive program in the Marine Corps was relatively small over the time period studied, the authors stated that it was not feasible to obtain precise estimates of the effects (Warner, Simon, and Payne, 2001).

In Chapter 7 of the study the authors looked at the skill-channeling effects of enlistment bonuses. The authors used multiple regression analysis to evaluate the enlistment effects of a MOS being eligible or ineligible for a monetary incentive. At the time this study was conducted, Army enlistees could not receive both an enlistment bonus and Army college fund benefit. The analysis of skill channeling used 10 years of data and within this period there were 16 period-to-period policy combinations (Warner, Simon, and Payne, 2001).[29] The number of cells and contracts in each category are provided in Table 25. Each cell represented a combination of MOS and term of service. “Cells that had fewer than five contracts were excluded from the database to eliminate scale effects of small cells” (Warner, Simon, and Payne, 2001). This reduced the observations in the database to 10,758.

[29] “Example of policy combinations: ACF-on to ACF-off, EB-on to EB-off, ACF-on to EB-on, and so on.” (Warner, Simon, and Payne 2001)

Table 25. Incentive Frequencies (FY 1987-96 Data)

Incentive Frequencies from Minimaster (FY 1987-96 Data)

Eligible For	*Number of Cells*	*Number of Contracts*	*ACF Take Rate*	*EB Take Rate*	*Contracts Per Cell*
Neither	8297 (56.6%)	212,875 (42.3%)	0	0	25.65
ACF	3311 (22.6%)	167,058 (33.2%)	86%	0	50.44
EB	1948 (13.3%)	23,752 (4.7%)	0	94%	12.98
Both	1102 (7.5%)	99,749 (19.8%)	41%	45%	90.52
Total	14,658	503,434	37%	13.4%	34.34

(Source: Warner, Simon, and Payne, 2001, Table 7.1)

The authors used two multiple regression models. In both models the percent change in contracts was the dependent variable. “The first model estimates the effects of program changes using dummy variables for each change as explanatory variables” (Warner, Simon, and Payne 2001). The second model includes the changes in the values of the bonuses. “The Army changed enlistment incentive options 39 times between FY87 and FY96” (Warner, Simon, and Payne 2001). Both models included two control variables. The number of days in each period was not equal, so a variable representing the percent change in the number of days was included. There was also a variable to control for the effect of overall recruiting. The estimated effects for the first model are shown in Table 26.

Table 26. Model percent change in number of contracts

Model 1: Percent Change in the Number of Contracts in MOS-YO Cells

Variable	*Coefficient*	*T-Statistic*
Intercept	0.245	19.28
Percent Change in Number of Days	0.897	52.64
Percent Change in Aggregate High-quality	0.011	2.79
Neither to ACF	0.508	5.84
Neither to EB	0.420	2.55
Neither to Both	0.709	3.82
ACF to Neither	-0.409	-5.30
EB to Neither	-0.048	-0.35
Both to Neither	-0.279	-1.03
EB to ACF	-0.348	-0.92
ACF to EB	-0.070	-0.12
ACF to Both	-0.040	-0.33
EB to Both	0.346	2.29
Both to ACF	-0.291	-2.82
Both to EB	-0.567	-3.44
Sample Size	10758	
R^2	0.222	
F Tests for Symmetry:		
Neither to ACF = - ACF to Neither	0.709	(accept)
Neither to EB = - EB to Neither	2.984	(accept)
Neither to Both = - Both to Neither	1.714	(accept)
ACF to Both = - Both to ACF	4.319	(reject)
EB to Both = - Both to EB	0.964	(accept)

(Source: Warner, Simon, and Payne, 2001, Table 7.3)

The coefficient estimates the percentage change in enlistments for a particular policy change. For example the neither to ACF change would result in a 50.8 percent increase in contracts. A majority of the coefficients were significant, but the R^2 was only 22.2 percent, so there is a lot of variability that this model does not explain. Furthermore, the results are vague on what MOS and term of service they represent. Each category groups all of the MOSs and terms of service together. The model shows how policy change can effect enlistments, but presumably a policy change could affect each MOS differently. The model should have been run for each specific MOS to provide the

estimated effects of policy change for that particular MOS. As stated previously the authors used a second model that includes the changes in incentive levels. The results of the second model are provided in Table 27.

Table 27. Model 2 percent change in number of contracts

Model 2: Percent Change in Number of Contracts in MOS-YO Cells

Variable	*Coefficient*	*T-Statistic*
Intercept	0.244	20.18
Pct Change in Number of Days	0.895	52.55
Pct Change in Aggregate High-quality	0.010	2.70
Change in EB ($1,000)	0.069	5.49
Change in PVCB ($1,000)	0.069	7.90
Sample Size	10758	
R^2	0.220	

(Source: Warner, Simon, and Payne, 2001, Table 7.3)

The coefficients for the second model show that a $1000 increase in enlistment bonus or college fund would result in a 7 percent change in enlistment. This model has some of the same problems as the first model. As in the previous model, the R^2 is low and the model does not estimate the change in value for each specific MOS. Each MOS and term of service could have a different utility value. The estimates are too broad to apply the theory of substitution. The theory of substitution is that a person could be willing to sacrifice one economic good (desired MOS) to obtain more of other economic goods (enlistment bonus).

Harold Larson also used regression analysis on historical data in 1995 to analyze Army enlistment bonuses. The study analyzed eight different MOS categories over six fiscal years (1988-1993). The goal was to determine the optimal enlistment bonus to offer for each MOS category. The methodology used by the author was called a linear spline with one knot.

The linear spline with one knot is a straight line which has been bent at one location (the knot). The knot was considered to be the optimal value for an enlistment bonus. The author used a simple model. The dependent variable was the average number of contracts per day for the month and the explanatory variable was the CPI-adjusted enlistment bonus. Using this method to estimate the effects of enlistment bonuses requires a large variance in enlistment bonuses offered.

There were several different bonus amounts offered during the time period of the sample. For example the infantry MOS offered bonuses ranging from $3000 to $8000. To ensure that bonuses were the same for each period, the time frame used was broken down into 28 periods. The periods varied from 26 to 171 days. Since the number of days and contracts varied per period the author weighted the values in the model. “The weights applied were estimated from the observed data by the reciprocals of the standard errors of the mean number of contracts per month” (Larson, 1995). Then the author ran a regression for each of the eight different MOSs. The regressions included all contracts for the given MOS, not just the contracts that were assigned bonuses. F-tests were used to determine the

significance of the estimations.[30] Appendix B of "Analysis of Recruiting Bonus Payments" provides the details of the Methodology used.

The model does not seem to account for external factors that would influence the estimates. The author does not state how the study accounted for the number of contracts at each bonus level. For example, if there were one hundred $8000 enlistment bonuses and there were ten thousand $3000 enlistment bonuses, the smaller bonus would naturally result in more contracts. The recommended bonus values are equal to the median value as shown in Table 28 and Table 29. The study also does not account for the time period in which the bonuses were offered. Larger bonuses are typically awarded during periods of difficulty in recruiting.

Table 28. Summary statistics for knot values

MOS	Mean	Std Dev	Median	6^{th} Quantile	95^{th} Quantile
11X	2915.18	3.28	2915.45	2908.14	2918.29
13B	3468.61	672.98	3145.36	2901.35	4569.32
13M	2357.99	413.17	2252.25	1917.55	3371.87
16S	1092.61	601.97	967.12	967.12	1470.59
19D	3145.62	504.56	3243.74	2085.51	3751.34
63B	2615.41	145.60	2729.26	2310.54	2729.26
63T	2324.82	370.33	2169.20	2143.62	3234.75
94B	2295.66	1065.29	1497.01	1485.15	4338.39

(Source: Larson 1995, Table 4)

[30] Appendix B of "Analysis of Recruiting Bonus Payments" by Harold Larson provides the details of the methodology used.

Table 29. Recommended four-year bonus values

MOS	Amount	Comments
11X	$2915	Very strong recommendation
13B	$3145	Strong recommendation
13M	$2252	Strong recommendation
16S	-	Not appropriate model
19D	$3244	Weak recommendation
63B	$2729	Moderately strong recommendation
63T	-	Not appropriate model
94B	$1497	Weak recommendation

(Source: Larson 1995, Table 5)

D. SUMMARY

As shown in this chapter researchers have used different methods to analyze monetary incentives. The methodology of choice depends on the objective and the resources available.

Surveys are beneficial when trying to infer what decisions individuals would make when new incentives are incorporated or in the absence of current incentives. As shown in the “Choice-Based Conjoint Study of Recruitment Incentives,” using civilian youth as survey participants is informative when trying to expand the recruiting market. Survey data from military enlistees is beneficial when trying to estimate how to channel enlistees into critically short enlistment programs. The downfalls to survey data are that it is not always readily available and collecting survey data can be time-intensive and costly.

Historical data is typically more accessible and it provides researchers with real-life decisions with binding

actions. Historical data can be beneficial when trying to estimate cost-effectiveness and enlistments gained due to monetary incentives. The pay elasticity approach is a method preferred by researchers when estimating cost effectiveness. Combined with multiple regression analysis, historical data can be used to estimate what incentives were preferred by enlistees. If there is adequate variance in the data, multiple regression analysis could be used to estimate the optimal value of enlistment bonuses.

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IV. DATA

The purpose of this chapter is to describe the data used in this research and explain the process for selecting the variables. Additionally, a preliminary analysis will examines the applicability of using the data to effectively estimate the optimal incentive for enlistment bonuses. The analysis also tries to identify any factors that might influence the effectiveness of the enlistment bonus (EB) program.

A. DATA SOURCES

The recruiting data used in this research was obtained from two sources. The first source was the Total Force Data Warehouse (TFDW), and the second source was the Marine Corps Recruiting Command (MCRC).

1. TFDW & MCRC

The recruiting data consisted of cross-sectional and time series data. The Marine Corps Recruiting Information Support System (MCRISS) supplies the recruiting data to the TFDW and it is captured in a monthly "snap shot." The TFDW started receiving MCRISS data in July of 2004; data prior to this was compiled from the previous database.[31] Data from fiscal year (FY) 2004 to present is the most accurate, but there was sufficient data in the TFDW to go back to FY 2000. The TFDW is missing a large amount of recruiting data before FY 2000, so this research used recruiting data only from FY 2000 through FY 2007.

[31] As reported by a Marine Corps representative who manages the TFDW at HQMC.

MCRC was used to collect information on the annual recruiting mission, number of enlistment programs and bonuses allocated, and the qualification requirements for enlistment programs. MCRC was also limited on how far back it could provide recruiting data, but it was able to provide data from FY 2000 through FY 2007.

B. VARIABLES

The variables selected from the TFDW are shown in Table 30. This research chose to use the date on which enlistees shipped to recruit training instead of the date they enlisted in the delayed entry program (DEP). This was done to reduce the number of duplicate records. It is less likely that a recruit be discharged from recruit training and contracted again in the same FY than for an enlistee to be discharged from the DEP and contracted again in the same FY. The data was also restricted to active duty enlistees. A description of the Marine Corps enlistment program codes is provided in Table 31.

Table 30. TFDW VARIABLES

TFDW VARIABLES	
APPLICANT_ID	Number assigned to enlistee
SKILL_PROGRAM	Enlistment program assigned to enlistee
TERM_OF_ENLISTMENT	Length of obligated service
EB_PROGRAM	Enlistment bonus assigned to enlistee
EB_AMT	Amount of enlistment bonus
SHIPPING_BONUS	Amount of shipping bonus
EDUC_ALLOW	Education incentive
STUDENT_LN	Student loan payoff program
MCCF_PROGRAM	Marine Corps College Fund
AFQT_SCORE	AFQT Score
EL	Electronics Score
GT	General technical knowledge score
MM	Mechanical score

TFDW VARIABLES	
CL	Clerical score
EDUCATION_ CODE	Enlistee education level
FY	Fiscal year enlistee shipped to recruit training
SHIP_DATE	Date enlistee shipped to recruit training
MARITAL_STATUS	Enlistee marital status
GENDER	Enlistee gender
EDUCATION_TIER	Education tier
COMPONENT_CODE	Active or Reserve

(Source: HQMC, M&RA, TFDW, MCRISS)

Table 31. Enlistment Programs

ENLISTMENT PROGRAMS	
AE	Aviation Support
AF	Aviation Mechanic
AG	Aircrew/ Flight Mechanic/ Navigator
AJ	Aviation Operations
B5	Managerial Option
B6	Ground Option
B7	Electronic/ Data Option
B8	Mechanical Option
BA	Aviation Electronic Technician
BX	Data Systems
BY	Electronics Maintenance
CA	Transportation Option
CB	Legal and Administration
CC	Supply and Accounting
CD	Equipment/ Vehicle Repair
CE	Combat Support
CF	Ordnance Technician/ Metal Works
CG	Public Affairs
CH	Media Option
CJ	Logistics Option
CK	Fire Direction/ Control Specialist
CL	Combat Vehicle Repair
CM	Construction/ Utilities
CN	Service Management
DB	Command and Control/ Electrician
DC	Cryptologic Linguist
DD	Intelligence/ Signal Intel/ Ground Electronic Warfare

ENLISTMENT PROGRAMS	
G6	Food Service Option
H1	Arabic Linguist
H2	Arabic Linguist
HD	National Call to Service
OO	Open Contract
U2	Musician Enlistment Option
UH	Infantry Option
UJ	Nuclear, Biological and Chemical
UT	Military Police & Correction
UV	Marine Corps Security Forces
UW	Marine Corps Security Forces (PRP)
UZ	Marine Recon
YW	Presidential Support/ Special Weapon Section

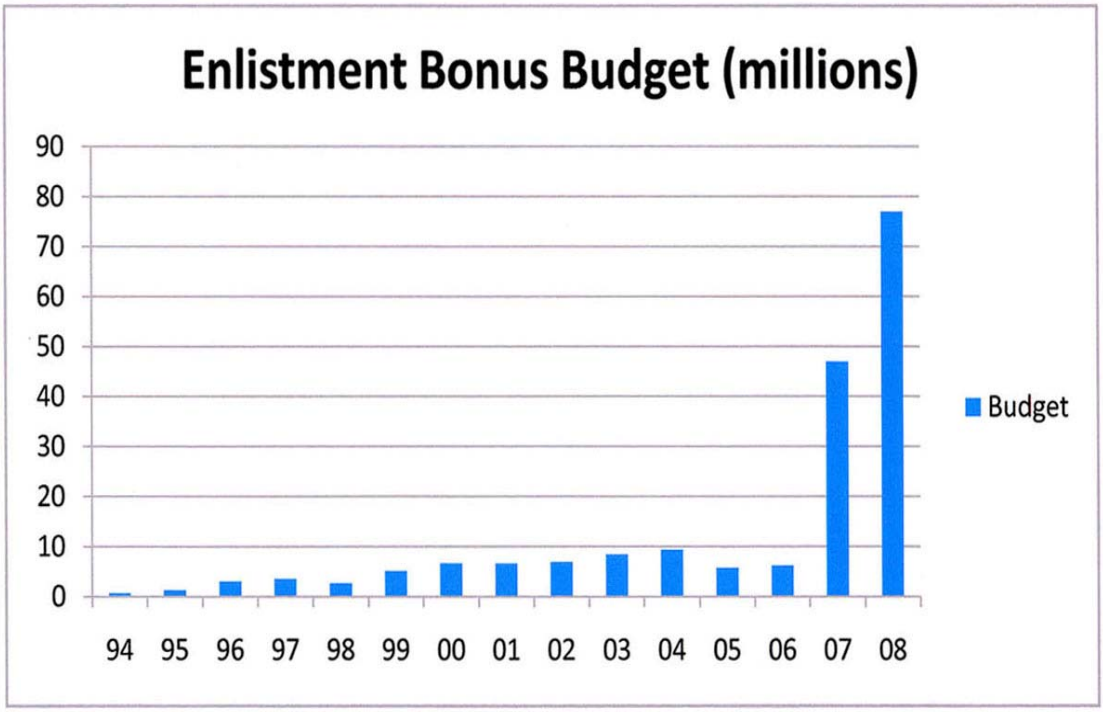
(Source: MCO 1130.53, Enlistment Option Programs)

C. ANALYSIS OF DATA

1. Predicting the Optimal Incentive for an Enlistment Bonus

The data obtained from the TFDW and the MCRC cannot be used to effectively estimate the optimal value of an enlistment bonus. First, historical data on Marine Corps EB program is limited. Second, until recently, only a limited number of enlistment programs qualified for an EB and the Marine Corps EB budget has been relatively small, making it difficult to estimate the effects of the EB program, as shown in Figure 8 and Table 32.

Figure 8. Enlistment Bonus Budget



(Source: HQMC, M&RA, Enlisted Plans Section)

Third, there is not enough variation in amounts used in the EB program to statistically compare the results of the bonuses. In FY 2000, six enlistment programs qualified for an EB. The value of the EB for those enlistment programs neither increased nor decreased from FY 2000 through FY 2007, as shown in Table 32. The Marine Corps did increase the number of enlistment programs qualified for an EB in FY 2005, but there still has not been enough variation to effectively estimate the optimal bonus amount. The data used in this research may not support a multiple regression analysis to estimate the effects of the EB program, but the data can be used to identify relationships inherent in the recruiting data.

Table 32. Marine Corps Enlistment Bonuses

Number of Bonuses allocated								
Bonus prg/value	***Percentage of Bonuses used***							
Enlistment prg	***FY00***	***FY01***	***FY02***	***FY03***	***FY04***	***FY05***	***FY06***	***FY07***
BZ/5000	431	500	529	578	412	644	533	350
BY	91%	73%	78%	104%	94%	79%	92%	98%
E1/4000	85	120	118	124	108	134	155	109
AJ	91%	105%	69%	108%	91%	102%	99%	92%
E3/4000	15	15	12	35	18	31	36	201
CG	33%	33%	92%	97%	94%	87%	97%	98%
E4/6000	187	210	196	178	143	192	201	201
CK	79%	53%	80%	110%	90%	95%	97%	98%
E6/4000	24	50	50	101	71	106	104	125
DC	100%	60%	114%	97%	97%	85%	89%	90%
E7/3000	539	650	594	490	475	543	554	204
BA	86%	67%	99%	109%	97%	99%	98%	95%
***NA/5000**						60	171	103
HD						148%	101%	92%
NB/student ln payoff ($10K)						60	54	72
						27%	52%	21%
NC/12 month educ allow						60	35	78
						25%	23%	12%
ND/36 mnth educ allow						60	48	85
						30%	44%	20%
UZ/10000							402	416
UZ							100%	100%
X1/10000								1028
B7,CA,CC,DB								90%
****F1/5000**								182
CA								100%
****F2/5000**								197
CC								100%
F3/5000								260
CJ								94%
F4/6000								154
DD								106%
M1/10000								35
M1								97%

Blank cells: Enlistment bonus was not available for that FY.
* NA, NB, NC are all bonus programs for enlistment program HD.
** Initial allocations for F1 was 480 and F2 was 409. Allocations not already assigned to an enlistee were deleted when the X1 program was incorporated in the summer of FY 2007.

(Source: MCRC, End of FY recruiting report)

2. Meeting Enlistment Program Requirements

The Marine Corps EB program remained unchanged for several years as shown in Figure 8 and Table 32. The lack of variation led to a review of the EB program to see what effect, if any, not changing the EB program had on the Marine Corps meeting individual enlistment program requirements. The percentage of the required enlistment programs attained and the number of enlistment programs over or below the requirement are shown in Table 33 and Table 34.

Table 33. Percentage of Marine Corps Enlistment Programs attained

Percentage of enlistment programs attained									
Program	***FY00***	***FY01***	***FY02***	***FY03***	***FY04***	***FY05***	***FY06***	***FY07***	***AVG***
HD					89	68	68	45	68
CC	100	98	56	68	65	57	87	76	76
G6	83	85	92	70	75	75	105	90	84
B7						85	87	90	87
B6						72	97	92	87
CA	94	85	83	101	86	72	93	94	88
BY	90	99	100	101	95	84	88	75	92
UZ	78						100	100	93
X1								93	93
CG	85	114	90	106	81	94	88	87	93
CJ	95	90	97	96	92	88	97	91	93
UJ	87	97	99	102	92	90	97	96	95
DB	101	95	92	105	96	83	97	93	95
B8						91	100	99	97
CK	95	88	93	110	101	96	97	99	97
DC	111	101	100	105	101	84	90	89	98
AE	100	99	100	98	98	96	99	97	98
CL	104	93	95	108	96	98	99	99	99
B5						104	100	97	100
UW			100	100	106	99	100	98	101

Percentage of enlistment programs attained									
Program	***FY00***	***FY01***	***FY02***	***FY03***	***FY04***	***FY05***	***FY06***	***FY07***	***AVG***
CM	98	91	100	109	107	100	101	100	101
CD	99	99	99	106	102	102	100	100	101
CB	102	109	97	105	97	101	99	100	101
AF	103	100	103	110	97	100	101	100	102
UT	101	106	104	109	100	96	99	99	102
UV	104	100	100	100	108	100	101	102	102
UH	102	108	101	100	104	101	100	101	102
CF	99	95	100	108	113	104	101	100	103
BA	96	103	100	109	98	118	98	99	103
BX	107	103	121	110	100	96	98	98	104
CN	100	105	101	110	107	107	100	104	104
CE	100	105	102	112	105	113	102	100	105
CH	114	119	118	100	94	89	107	101	105
AJ	99	100	100	110	100	139	100	97	106
AG	104	102	100	110	97	133	100	99	106
DD	105	106	102	120	116	100	101	100	106
Blank cells: Enlistment program not available for that FY. Percentages have been rounded to 0 decimal points.									

(Source: MCRC, End of FY recruiting report)

Table 34. Number of Marine Corps Enlistment Programs short or over annual requirement

Number of enlistment programs +/- annual requirement									
Program	***FY00***	***FY01***	***FY02***	***FY03***	***FY04***	***FY05***	***FY06***	***FY07***	***AVG***
CC	3	-24	-527	-333	-362	-471	-104	-309	-266
CA	-100	-263	-321	9	-224	-495	-88	-103	-198
DB	11	-83	-163	91	-82	-341	-38	-128	-92
B7						-48	-103	-85	-79
BY	-94	-10	2	10	-33	-143	-101	-228	-75
X1								-70	-70
CJ	-46	-100	-37	-42	-81	-129	-32	-74	-68
B6						-91	-21	-83	-65
G6	-89	-59	-15	-114	-94	-97	14	-51	-63
HD					-19	79	-110	-191	-60
UZ	-69						1	1	-22
AE	0	-13	0	-21	-18	-37	-6	-20	-14

Number of enlistment programs +/- annual requirement									
Program	***FY00***	***FY01***	***FY02***	***FY03***	***FY04***	***FY05***	***FY06***	***FY07***	***AVG***
B8						-29	0	-8	-12
CK	-18	-39	-23	29	2	-14	-9	-2	-9
UJ	-18	-5	-2	4	-17	-23	-6	-7	-9
CG	-9	10	-8	4	-15	-6	-13	-12	-6
DC	19	1	0	12	2	-31	-19	-28	-6
CL	11	-19	-17	22	-10	-5	-3	-3	-3
B5						13	4	-24	-2
UW				-2	29	-4	1	-9	3
CH	11	13	13	0	-4	-8	5	1	4
CD	-10	-13	-14	64	-17	29	2	-2	5
CM	-26	-116	2	108	81	4	12	-2	8
CF	-3	-17	1	31	50	14	3	1	10
UT	12	38	25	53	-1	-30	-4	-12	10
UV	41	1	1	-1	46	-2	5	13	13
AJ	-3	2	1	29	1	110	0	-11	16
BX	35	14	104	46	-1	-30	-10	-12	18
AG	14	8	1	33	-10	96	0	5	18
CB	40	153	-52	84	-46	15	-7	1	24
DD	26	24	8	81	70	-2	3	-3	26
CN	3	30	5	60	40	43	1	28	26
AF	48	2	52	154	-52	8	11	2	28
BA	-65	46	1	108	-25	228	-29	-6	32
CE	0	48	23	104	46	125	15	3	46
UH	118	466	35	-31	266	115	2	49	128

(Source: MCRC, End of FY recruiting report)

The first step was to look at the enlistment programs in Table 33 that offered an enlistment bonus. This study chose to focus on the six enlistment programs that offered a bonus from FY 2000 through FY 2007: AJ, BA, BY, CG, CK, and DC. The value of the bonus for each enlistment program is shown in Table 32. The percentage of enlistment programs attained is shown in Table 35.

Table 35. Percentage of Enlistment Programs attained for EB programs

	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	AVG
BY	90%	99%	100%	101%	95%	84%	88%	75%	92%
CG	85%	114%	90%	106%	81%	94%	88%	87%	93%
CK	95%	88%	93%	110%	101%	96%	97%	99%	97%
DC	111%	101%	100%	105%	101%	84%	90%	89%	98%
BA	96%	103%	100%	109%	98%	118%	98%	99%	103%
AJ	99%	100%	100%	110%	100%	139%	100%	97%	106%

(Source: MCRC, End of FY recruiting report)

Table 35 shows that four of the six enlistment programs attained an average of 97 percent or more of the annual requirement. The AJ program qualified for a $4000 bonus and had the highest average, as shown in Table 32 and Table 35. The BY program qualified for a $5000 bonus and had the lowest average. Actually the BY program filled a majority of its annual requirement in FY00 through FYO4, but in FY05 the BY program began to fall short of the requirement. In addition, some of the other programs began to fall short of the requirement after FY05, as shown in Table 35. This may have been due to the Marine Corps increasing the number of enlistment programs qualified for an enlistment bonus in FY05 through FY07. Alternatively, perhaps the bonus may not have been seen to be as attractive as it had been in previous years. The next step was to look at the enlistment programs that failed to meet

the annual requirement over multiple years. There were numerous programs that were a few percentage points short, so this research focused on programs that were below 90 percent for multiple years. Five enlistment programs that consistently fell short of the annual requirement were identified: CA, CC, G6, HD, & B7. The percentage of the annual requirement attained for these enlistment programs is shown in Table 36.

Table 36. Enlistment Programs identified as consistently not meeting annual requirement

	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	AVG
HD					89%	68%	68%	45%	68%
CC	100%	98%	56%	69%	66%	57%	87%	76%	76%
G6	83%	85%	92%	70%	75%	75%	105%	90%	84%
B7						84%	86%	90%	87%
CA	94%	85%	83%	101%	86%	72%	93%	94%	89%

Blank cells: Enlistment program not available for that FY.

(Source: MCRC, End of FY recruiting report)

The enlistment programs CA, CC, and B7 were not qualified for a monetary incentive until FY07. Enlistment program G6 was never qualified for an enlistment incentive and HD was always qualified for an enlistment incentive. The CA, CC, and G6 programs consistently fell short of the annual requirement during the time period that the Marine Corps EB program remained unchanged (FY00-FY05). In FY02 only 56 percent of the requirement for CC enlistment

programs was attained; that meant the Marine Corps was short 527 enlistees in the CC program as shown in Table 34. In the following years the CC program continued to fall significantly short of the Marine Corps requirement. In FY05 the CA enlistment program was short 495 enlistees as shown in Table 34. That is a significant number of enlistees to be short in one enlistment program.

The Marine Corps also enlists around 1500 to 2000 recruits as open contracts each year; these recruits are assigned to enlistment programs that are critically short. The recruits enlisted as open contracts are not always qualified for the enlistment programs that are critically short. These include the CC and B7 enlistment programs, in which just over 50 percent of all enlistees meet the line score requirements (see Table 37).

Table 37. Enlistment Program line Score Requirements

Prg	*GT*	*MM*	*EL*	*CL*	*%enlistees qualified*	*Prg*	*GT*	*MM*	*EL*	*CL*	*%enlistees qualified*
UH	80				100.0%	***CD***		95			71.2%
CN				90	97.3%	***CM***		95			71.2%
CA		85			96.1%	***BA***			105		60.3%
CE	90				94.6%	***AJ***	105				59.9%
G6	90				94.6%	***CG***	105				59.9%
UV	90				94.6%	***CK***	105				59.9%
CF	95				87.0%	***DC***	105				59.9%
DB			95		86.6%	***AE***	105	95			59.2%
B5				100	74.3%	***AF***		105			59.1%
CL				100	74.3%	***B8***		105			59.1%
B6	100				73.5%	***CL***		105			59.1%
CH	100				73.5%	***CC***				105	56.2%
CJ	100				73.5%	***B7***	105		105		51.9%
DD	100				73.5%	***BY***			110		44.3%
PR	100				73.5%	***BX***	110				44.1%

Prg	GT	MM	EL	CL	%enlistees qualified	Prg	GT	MM	EL	CL	%enlistees qualified
UT	100				73.5%	UJ	110				44.1%
UW	100				73.5%	AG	110	105			41.2%

* This chart was computed by using the percentage of FY05-07 enlistees qualified for enlistment program.
** This chart only considers line score requirements for qualification. There are several other factors in determining qualification for an enlistment program.
*** Percentages have been rounded to one decimal point.

(Source: MCO 1130.53 Enlistment Program Options & TFDW, MCRISS, FY00-FY07)

Additionally, over 50 percent of the recruits enlisted as open contracts are "bravos"[32] and several of the enlistment programs that are critically short have a low percentage of "bravos" assigned to them as shown in Table 38. For example around 2 percent of the enlistees assigned to the CC and BY enlistment programs were "bravos". Relying on open contracts to fill critically short enlistment programs could leave some enlistment programs short of enough qualified enlistees.

This study did not have sufficient data to determine if critically short enlistment programs were still short after the enlistees with open contracts were assigned an enlistment program. However, considering that around 50 percent of open contracts are "bravos," enlistment programs with a small pool of qualified applicants should rely less on open contracts to fulfill program requirements.

[32] Bravo means that the enlistee's AFQT score was less than 50.

Table 38. Percentage of Bravos

Program	2000	2001	2002	2003	2004	2005	2006	2007
Total	34.3	35.1	32.9	31.3	29.8	31.7	32.4	34.9
BX	1.2	1.0	1.7	0.8	0.8	1.3	0.3	1.1
CG	0.0	0.0	2.8	1.3	0.0	1.0	2.2	1.2
UJ	2.7	0.9	3.4	0.5	0.5	1.9	0.9	1.4
CC	17.5	18.9	7.1	0.6	2.8	2.5	0.7	1.9
AG	2.8	3.9	1.7	1.7	0.5	2.1	1.6	2.5
BY	2.8	1.0	1.3	0.3	0.9	1.1	1.7	2.5
CK	5.4	8.3	3.0	1.9	3.0	7.6	6.8	2.8
UZ	1.9						4.2	5.8
DD	4.7	6.5	5.1	3.5	4.5	4.7	6.6	6.5
AJ	4.2	3.8	4.1	3.8	4.1	2.8	3.5	7.1
B7					8.3	11.0	12.2	9.2
U2	5.9	9.4	9.9	7.5	6.5	8.9	8.8	10.3
BA	2.6	3.8	4.4	4.9	4.7	7.2	7.7	11.2
AE	12.5	11.3	10.3	8.3	5.8	12.5	12.5	11.4
CH	10.0	6.7	10.5	8.6	1.5	10.3	11.7	11.8
UW					8.2	9.7	11.7	12.6
UT	18.9	23.6	17.4	17.7	11.1	18.2	24.0	21.4
AF	24.5	23.7	17.3	14.9	14.4	21.9	24.8	22.6
CJ	32.8	28.8	26.1	15.8	16.5	25.5	30.9	24.3
B6					18.8	22.6	22.9	24.4
UV	36.3	33.9	35.2	31.2	27.1	29.2	36.9	38.4
B8					22.7	38.1	38.2	39.2
UH	44.8	44.9	40.6	37.4	37.1	36.9	37.6	39.7
CB	42.9	48.1	26.0	14.9	25.7	34.3	34.2	40.1
B5					40.0	32.1	36.6	40.8
CL	40.0	24.0	27.4	24.8	23.9	32.5	34.3	41.3
CM	39.4	40.6	34.1	33.2	29.9	37.1	37.2	41.5
CE	51.0	49.4	44.9	43.2	35.4	40.0	43.1	45.6
CF	39.2	44.6	35.2	35.6	36.7	37.9	45.9	46.9
CD	49.5	46.0	48.0	40.5	42.1	47.6	52.2	54.0
DB	39.6	45.6	40.5	38.1	41.6	48.0	54.6	56.2
OO	38.6	39.0	49.6	53.7	55.4	55.5	57.1	59.7
CA	67.9	71.5	68.6	64.1	65.7	66.3	66.7	67.1
G6	52.7	55.6	57.9	59.3	59.2	58.7	68.2	70.7
CN	87.6	83.6	70.9	68.0	72.0	84.3	91.2	92.2
H1						33.3	100.0	100.0
H2						*	100.0	100.0

Blank cells: Enlistment program not offered for that FY.

* No enlistees for this program.

(Source: TFDW, MCRISS, FY00-FY07)

Additionally this research identified enlistment programs that exceeded their annual requirement. For example, the UH program consistently exceeded the annual requirement, as shown in Table 39. In FY01 the UH program exceeded the requirement by 466 enlistees. There are several other programs that exceeded the annual requirement by more than 100 enlistees.

Table 39. Number of Marine Corps Enlistment Programs short or over annual requirement

Number of enlistment programs +/- annual requirement									
Program	***FY00***	***FY01***	***FY02***	***FY03***	***FY04***	***FY05***	***FY06***	***FY07***	***AVG***
UH	118	466	35	-31	266	115	2	49	128
CE	0	48	23	104	46	125	15	3	46
BA	-65	46	1	108	-25	228	-29	-6	32
AF	48	2	52	154	-52	8	11	2	28
CN	3	30	5	60	40	43	1	28	26
DD	26	24	8	81	70	-2	3	-3	26
CB	40	153	-52	84	-46	15	-7	1	24
AG	14	8	1	33	-10	96	0	5	18
BX	35	14	104	46	-1	-30	-10	-12	18
AJ	-3	2	1	29	1	110	0	-11	16
UV	41	1	1	-1	46	-2	5	13	13
UT	12	38	25	53	-1	-30	-4	-12	10
CF	-3	-17	1	31	50	14	3	1	10
CM	-26	-116	2	108	81	4	12	-2	8
CD	-10	-13	-14	64	-17	29	2	-2	5
CH	11	13	13	0	-4	-8	5	1	4
UW				-2	29	-4	1	-9	3
B5						13	4	-24	-2
CL	11	-19	-17	22	-10	-5	-3	-3	-3
DC	19	1	0	12	2	-31	-19	-28	-6
CG	-9	10	-8	4	-15	-6	-13	-12	-6
CK	-18	-39	-23	29	2	-14	-9	-2	-9
UJ	-18	-5	-2	4	-17	-23	-6	-7	-9
B8						-29	0	-8	-12

Number of enlistment programs +/- annual requirement									
Program	**FY00**	**FY01**	**FY02**	**FY03**	**FY04**	**FY05**	**FY06**	**FY07**	**AVG**
AE	0	-13	0	-21	-18	-37	-6	-20	-14
UZ	-69						1	1	-22
HD					-19	79	-110	-191	-60
G6	-89	-59	-15	-114	-94	-97	14	-51	-63
B6						-91	-21	-83	-65
CJ	-46	-100	-37	-42	-81	-129	-32	-74	-68
X1								-70	-70
BY	-94	-10	2	10	-33	-143	-101	-228	-75
B7						-48	-103	-85	-79
DB	11	-83	-163	91	-82	-341	-38	-128	-92
CA	-100	-263	-321	9	-224	-495	-88	-103	-198
CC	3	-24	-527	-333	-362	-471	-104	-309	-266

(Source: MCRC, End of FY recruiting report)

The total number of enlistees for all enlistment programs that were above or below the enlistment program requirement is shown in Table 40. For example, in FY01 856 enlistees were enlisted into enlistment programs that had already met their annual requirement and the total number of unfilled billets, for enlistment programs that had not met their annual requirements, was 761. When programs exceed their annual requirement it can cause critical shortages in other enlistment programs, negatively impacting the shaping of the enlisted force. In FY06 and FY07 the Marine Corps reduced the number of enlistees assigned to programs that had met their annual requirement as shown in Table 40.

Table 40. Cumulative number of enlistment programs over or short of annual requirement

	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07
Over	392	856	274	1136	633	879	79	104
Short	-550	-761	-1179	-544	-1111	-2036	-703	-1483

(Source: MCRC, End of FY recruiting report)

Enlisting enough high-quality applicants to meet the enlistment program requirements is of grave concern. This research approached the problem by breaking down the percentage of applicants qualified for each enlistment program as shown in Table 37. It was found that seventy percent of the recruits enlisted into the Marine Corps are qualified for 19 of the 34 enlistment programs and nearly 60 percent of the recruits are qualified for 28 of the 34 enlistment programs. The AG enlistment program had the smallest number of qualified applicants, but in FY07 there were almost 14,000 qualified applicants to fill the requirement of 413 enlistees in the AG enlistment program. The data shows that the Marine Corps can recruit enough high-quality applicants to meet the requirements of the enlistment programs. The average AFQT and line scores for Marine Corps recruits in FY00 through FY07 is shown in Table 41.

Table 41. Average ASVAB Scores

AVERAGE SCORES					
Row Labels	AFQT_SCORE	EL	GT	MM	CL
2000	58.5	105.7	106.4	103.2	107.6
2001	58.2	105.1	106.1	102.9	107.4
2002	59.2	106.3	107.0	103.9	108.1
2003	60.2	106.9	107.3	104.1	106.8
2004	61.0	107.5	107.4	104.2	109.7
2005	60.6	108.3	108.1	107.5	108.1
2006	60.6	108.6	108.6	108.9	107.5
2007	59.5	107.9	108.0	108.1	106.9
Grand Total	**59.8**	**107.1**	**107.4**	**105.6**	**107.9**

(Source: TFDW, MCRISS, FY00-FY07)

3. EB Programs

The Marine Corps has historically required an AFQT of 50 or higher to qualify for an enlistment bonus. In the last few years, the Marine Corps has changed its policy for a few enlistment programs. This research examined what effect the change in policy has had on the quality of applicants enlisting in programs offering enlistments bonuses to “bravos.”

In FY 2007, the Marine Corps changed the AFQT requirement for shipping bonuses to 31 and began offering the X1 enlistment bonus that required an AFQT of 31. There was also an enlistment bonus for Arabic interpreters that had an AFQT requirement as low as 21, but that was a small program that is no longer available. The X1 enlistment bonus was a feeder program for the B7, CA, CC, & DB enlistment programs. The first step was to look at the percentage of “bravos” that have historically enlisted in

the B7, CA, CC, & DB programs and compare it to the percentage of “bravos” in FY07. The percentage of “bravos” for each program is shown in Table 42. The percentage of “bravos” was found to be consistent with the percentages in the past and the overall percentage of “bravos” in FY07 was only 2 percent higher than the average for the time period analyzed as shown in Table 42. This data shows that offering a bonus to “bravos” did not significantly effect the quality of applicants.

The X1 program was eliminated in FY08, but the Marine Corps began offering enlistment bonuses for the CA, CC, & DB programs that require an AFQT of 40. This should have a positive effect on the Marine Corps’ ability to fill critically short enlistment programs. Thirty-three percent of the Marine Corps enlistees are “bravos” as shown in Table 42. Some of the enlistment programs are filled with a higher percentage of “bravos.” Offering enlistment bonuses to “bravos” in critically short enlistment programs typically filled by “bravos” should level the playing field among more desirable enlistment programs typically filled by “bravos.”

Table 42. Percentage of Bravos

Program	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*AVG*
Overall	34.3	35.1	32.9	31.3	29.8	31.7	32.4	34.9	32.8
BX	1.2	1	1.7	0.8	0.8	1.3	0.3	1.1	1.0
CG	0	0	2.8	1.3	0	1	2.2	1.2	1.1
BY	2.8	1	1.3	0.3	0.9	1.1	1.7	2.5	1.5
UJ	2.7	0.9	3.4	0.5	0.5	1.9	0.9	1.4	1.5
AG	2.8	3.9	1.7	1.7	0.5	2.1	1.6	2.5	2.1
UZ	1.9						4.2	5.8	4.0

Program	2000	2001	2002	2003	2004	2005	2006	2007	AVG
AJ	4.2	3.8	4.1	3.8	4.1	2.8	3.5	7.1	4.2
CK	5.4	8.3	3	1.9	3	7.6	6.8	2.8	4.9
DD	4.7	6.5	5.1	3.5	4.5	4.7	6.6	6.5	5.3
BA	2.6	3.8	4.4	4.9	4.7	7.2	7.7	11.2	5.8
CC	17.5	18.9	7.1	0.6	2.8	2.5	0.7	1.9	6.5
U2	5.9	9.4	9.9	7.5	6.5	8.9	8.8	10.3	8.4
CH	10	6.7	10.5	8.6	1.5	10.3	11.7	11.8	8.9
B7					8.3	11	12.2	9.2	10.2
UW					8.2	9.7	11.7	12.6	10.6
AE	12.5	11.3	10.3	8.3	5.8	12.5	12.5	11.4	10.6
UT	18.9	23.6	17.4	17.7	11.1	18.2	24	21.4	19.0
AF	24.5	23.7	17.3	14.9	14.4	21.9	24.8	22.6	20.5
B6					18.8	22.6	22.9	24.4	22.2
CJ	32.8	28.8	26.1	15.8	16.5	25.5	30.9	24.3	25.1
CL	40	24	27.4	24.8	23.9	32.5	34.3	41.3	31.0
CB	42.9	48.1	26	14.9	25.7	34.3	34.2	40.1	33.3
UV	36.3	33.9	35.2	31.2	27.1	29.2	36.9	38.4	33.5
B8					22.7	38.1	38.2	39.2	34.6
CM	39.4	40.6	34.1	33.2	29.9	37.1	37.2	41.5	36.6
B5					40	32.1	36.6	40.8	37.4
UH	44.8	44.9	40.6	37.4	37.1	36.9	37.6	39.7	39.9
CF	39.2	44.6	35.2	35.6	36.7	37.9	45.9	46.9	40.3
CE	51	49.4	44.9	43.2	35.4	40	43.1	45.6	44.1
DB	39.6	45.6	40.5	38.1	41.6	48	54.6	56.2	45.5
CD	49.5	46	48	40.5	42.1	47.6	52.2	54	47.5
OO	38.6	39	49.6	53.7	55.4	55.5	57.1	59.7	51.1
G6	52.7	55.6	57.9	59.3	59.2	58.7	68.2	70.7	60.3
CA	67.9	71.5	68.6	64.1	65.7	66.3	66.7	67.1	67.2
H1						33.3	100	100	77.8
CN	87.6	83.6	70.9	68	72	84.3	91.2	92.2	81.2
H2						*	100	100	100.0

Blank cells: program not offered for that FY.
* No enlistees for this program.

(Source: TFDW, MCRISS, FY00-FY07)

The last thing this research looked at was the attractiveness of the enlistment bonuses. This research focused on bonuses that had consistently assigned less than 90 percent of the allocation. The percentage of the allocated bonuses used is shown in Table 42.

Table 43. Percentage of allocated bonuses used

Number of Bonuses allocated								
Bonus prg/value	***Percentage of Bonuses used***							
Enlistment prg	***FY00***	***FY01***	***FY02***	***FY03***	***FY04***	***FY05***	***FY06***	***FY07***
BZ/5000	431	500	529	578	412	644	533	350
BY	91%	73%	78%	104%	94%	79%	92%	98%
E1/4000	85	120	118	124	108	134	155	109
AJ	91%	105%	69%	108%	91%	102%	99%	92%
E3/4000	15	15	12	35	18	31	36	201
CG	33%	33%	92%	97%	94%	87%	97%	98%
E4/6000	187	210	196	178	143	192	201	201
CK	79%	53%	80%	110%	90%	95%	97%	98%
E6/4000	24	50	50	101	71	106	104	125
DC	100%	60%	114%	97%	97%	85%	89%	90%
E7/3000	539	650	594	490	475	543	554	204
BA	86%	67%	99%	109%	97%	99%	98%	95%
***NA/5000**						60	171	103
HD						148%	101%	92%
***NB/student ln payoff ($10K)**						60	54	72
						27%	52%	21%
***NC/12 month educ allow**						60	35	78
						25%	23%	12%
***ND/36 mnth educ allow**						60	48	85
						30%	44%	20%
UZ/10000							402	416
UZ							100%	100%
X1/10000								1028
B7,CA,CC,DB								90%
****F1/5000**								182
CA								100%
****F2/5000**								197
CC								100%
F3/5000								260
CJ								94%

Number of Bonuses allocated								
Bonus prg/value	**Percentage of Bonuses used**							
Enlistment prg	***FY00***	***FY01***	***FY02***	***FY03***	***FY04***	***FY05***	***FY06***	***FY07***
F4/6000								154
DD								106%
M1/10000								35
M1								97%

Blank cells: Enlistment bonus was not available for that FY.
* NA, NB, NC, ND are all bonus programs for enlistment program HD.
** Initial allocations for F1 was 480 and F2 was 409. Allocations not already assigned to an enlistee were deleted when the X1 program was incorporated in the summer of FY 2007.

(Source: MCRC, End of FY recruiting report)

There were several enlistment incentives whose fill rate dropped below 90 percent during one of the fiscal years the incentive was offered, but there were three enlistment incentives that remained well below 90 percent the entire time they were offered: NB, NC and ND (see Table 42). The NA, NB, NC, and ND were incentives for the HD program. Applicants enlisting in the HD program were given the option to select either a $5000 EB (NA), $10000 student loan payoff, 12 month education allowance, or a 36 month education allowance at half the monthly rate. A majority of the applicants chose the NA incentive, as shown in Table 42. The student loan payoff and education allowance incentives were not as attractive. The HD program was also one of the programs that this research identified as consistently not meeting annual enlistment program requirements (Table 36). This study can not determine whether just offering the $5000 EB or eliminating the cap on the number of $5000 EBs allocated would have encouraged more enlistees to select the HD enlistment program, but it may be something the Marine Corps may want to try if the HD

program is incorporated again.[33] In addition there were two incentives offered in FY07 that the Marine Corps identified as not enticing enough enlistees: F1 and F2 (HQMC, M&RA, Enlisted Plans Section). The initial allocation for the F1 was 480 bonuses and the F2 was 409 bonuses. Actually, the Marine Corps used less than 50 percent of the original allocation. The F1 and F2 both offered a $5000 EB and they required a minimum AFQT of 50 to qualify for the bonus. The F1 was a bonus program for the CA enlistment program and the F2 was a bonus program for the CC enlistment program. In the summer of 2007, any F1 and F2 allocations that had not already been assigned were deleted and the Marine Corps incorporated the X1.[34] The X1 EB offered a $10000 EB, required a minimum AFQT of 31 to qualify, and was a bonus program for enlistment programs B7, CA, CC, and DB. In the three-month time period during which the X1 was offered, 90 percent of the 1000 bonuses allocated were used.[35] The question this research can not answer is, did reducing the AFQT requirement or increasing the monetary incentive have the larger effect on assigning the bonus? If the AFQT requirement had been reduced on the F1 program, it might have attracted more enlistees, since a majority of those who enlist into the CA program are “bravos,” as shown in Table 42. As stated previously the Marine Corps began to offer more enlistment bonuses to “bravos” in FY08.

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[33] The HD program was not offered in FY08 (HQMC, M&RA, Enlisted Plans Section)

[34] Chapter II, page 26 of this thesis provides additional information on the X1 program.

[35] Phone conversation USMC representative assigned to M&RA, Enlisted Plans Section.

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V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

A. SUMMARY

This research analyzed the Marine Corps enlistment bonus program (EBP). The purpose was to provide MPP-20 with alternatives to increase the effectiveness of the EBP. The research was primarily qualitative, but it included a quantative analysis of the recruiting data from the Total Force Data Warehouse and the Marine Corps Recruiting Command.

The Marine Corps uses the EBP to attract high-quality applicants into enlistment programs for critically short military occupational skills. The research found that the Marine Corps has been very successful at meeting its yearly recruiting goal. The problem lies in recruiting the correct number of applicants into each enlistment program and shipping the applicants to recruit training at a specified time. The research analyzed previous studies to find methods that could be used to predict the optimal enlistment incentive in order to level the playing field between assumed “desirable” enlistment programs and “undesirable” enlistment programs.

The methodologies of previous studies have varied, but generally they used regression analysis on historical data or analysis of survey responses. The advantage of historical data is that it tends to be readily available and it captures real choices with binding decisions. One drawback to historical data is that there has to be sufficient variation in the data to effectively estimate the effects of the monetary incentives. Surveys used to

analyze monetary incentives vary in complexity, but they typically gather data from either the civilian youth population or military recruits. An advantage to collecting information from military recruits is that they are more accessible, and are familiar with military programs. Recruits can also provide insight into why they chose to enlist, what they would have done in the absence of an incentive, and what decisions they would have made if other incentives had been offered. The drawback to surveys is that applicable surveys are not always available, and developing surveys and collecting the data can be time-intensive and costly.

The research analyzed recruiting data from the Total Force Data Warehouse (TFDW) and the Marine Corps Recruiting Command. The TFDW was missing a large amount of recruiting data before FY 2000, so this research used recruiting data from FY 2000 through FY 2007 only. Marine Corps Recruiting Command (MCRC) was also limited on how far back it could provide data, but it was able to provide data from FY 2000 through FY 2007 as well. The data obtained could not be used to effectively estimate the optimal value of an enlistment bonus, but the recruiting data was useful in identifying relationships inherent to the data.

B. CONCLUSION AND RECOMMENDATIONS

1. Primary Research Question

a. How can MPP-20 Effectively Predict the Optimal Dollar Amount for Enlistment Bonuses?

Conclusion: MPP-20 could effectively predict the optimal dollar amount of enlistment incentives by

collecting survey data from enlistees or recruits. The survey should have the participants repeatedly select from a short list of enlistment programs and incentives to determine the participant's preference. The focus of the survey should be on determining what incentives will level the playing field between assumed "desirable" and "undesirable" enlistment programs. Tabulation of the choices made by survey participants and multiple regression analysis can be used to determine the marginal effects of different enlistment incentives.

Recommendation: This research recommends that during the first week of recruit training, the Marine Corps should administer a choice-based survey focused on enlistment programs and incentives to recruits. The information gathered could be used to determine the incentive preferences of recruits that chose to join the Marine Corps. This would also give feedback on hypothetical incentives being considered by the Marine Corps.

2. Secondary Research Questions

a. Can Data from the TFDW be used to Effectively Predict the Optimal Dollar Amount for Enlistment Bonuses?

Conclusion: This research determined that data from the TFDW cannot be used to effectively predict the optimal dollar amount for enlistment bonuses. The reasons the TFDW data could not be used as shown in chapter IV are these. First, the research was limited on how far back data could be collected on the Marine Corps EBP. Second, until recently, only a limited number of enlistment programs qualified for an enlistment bonus, and the budget for the

EBP had been relatively small. Third, there is minimal variation in the values of the bonuses during the time period used in this research.

Recommendation: Continue to collect and maintain recruiting data in the TFDW. Recent increases in the enlistment bonus program may create adequate variation to permit effective analysis of TFDW data in the future.

b. Do Minimum AFQT Requirements for Enlistment Bonus Programs Decrease the Effectiveness of the Enlistment Bonus Program?

Conclusion: The research was not able to determine with confidence if minimum AFQT requirements decrease the effectiveness of the EBP. This research did identify circumstances where authorizing enlistment bonuses to "bravos" may have increased the effectiveness of the EBP as shown in chapter IV. For example, the X1 enlistment bonus that required a minimum AFQT of 31 was more effective at attracting enlistees to select the CA program than the F1 enlistment bonus with a minimum AFQT requirement of 50. The X1 also offered a larger incentive, so this research cannot determine whether increasing the incentive or reducing the minimum AFQT requirement had the larger effect. There are other factors described in chapter 4 that support authorizing enlistment bonuses to "bravos."

Recommendation: MPP-20 should continue experimenting with EBP requirements.

c. What Factors Could be Decreasing the Effectiveness of the EBP.

Conclusion: The Marine Corps EBP was unchanged for several years (FY00-FY05). The reasoning behind not

changing the EBP was that the budget was relatively small and the Marine Corps was consistently meeting its annual recruiting goal, so representatives did not see a need to modify the EBP.[36] Failing to allocate additional funds or change the enlistment programs that qualified for an enlistment bonus could be the reason that, as shown in chapter 4, some enlistment programs were consistently short of their annual requirement.

Additionally, there were several enlistment programs that had exceeded their annual requirement. For example, the UH program exceeded its annual requirement in FY01 by 466 enlistees. This reduces the pool of applicants who can be assigned to critically short enlistment programs. In the past few years, MPP-20 has reduced the number of enlistees authorized for assignment to enlistment programs that have met their annual requirement. The fill rate of enlistment programs needs continuous monitoring to prevent exceeding annual requirements and reducing the number of critically short enlistment programs.

The research identified that over 50 percent of the enlistees with open contracts are “bravos” and, as shown in Chapter IV, that some enlistment programs have a very low percentage of “bravos.” Naturally, these are enlistment programs that have a smaller pool of qualified applicants. For example, approximately 2 percent of the CC and BY programs are “bravos.” Relying on open contracts to

[36] (Source: phone conversation with representative assigned to M&RA, Enlisted Plans Section and MCRC).

fill all of the critically short enlistment programs could leave some enlistment programs short of qualified enlistees.

Recommendation: Change the mandatory annual meeting with MPP-20 and MCRC to a quarterly meeting. This will increase the communication between the two organizations and ensure that the enlistment programs and the EBP are continuously monitored to ensure the effectiveness of the program. This will be useful, because as the market changes, or if the fill rate for an enlistment program is not progressing as planned, timely actions can be taken to correct the deficiency.

C. AREAS FOR FURTHER RESEARCH AND STUDY

There are three recommendations for further research to increase the effectiveness of the EBP.

1. Recommend developing a choice-based survey to determine the incentive preferences for Marine Corps enlistees. Determine whether the information gathered from the survey could be used to predict the optimal incentive for enlistment bonuses.

2. Examine what effect, if any, enlistment bonuses may have on the successful completion of military occupational skills (MOS) training. Is there a higher rate of completion of initial MOS training among enlistees assigned an enlistment bonus than among enlistees not assigned an enlistment bonus?

3. Examine the effectiveness of using open contracts to fill critically short enlistment programs. A small percentage of enlistees are not assigned an enlistment

program prior to recruit training. Enlistees not assigned an enlistment program (open contract) are used to fill critically short enlistment programs. Are there enough qualified open contracts to fill all of the critically short enlistment programs?

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